

TAKING MEANING OUT OF CONTEXT : ESSAYS ON
THE FOUNDATIONS OF NATURAL LANGUAGE
SEMANTICS

Matthew Dunbar Cameorn

A Thesis Submitted for the Degree of PhD
at the
University of St Andrews



2018

Full metadata for this item is available in
St Andrews Research Repository
at:

<http://research-repository.st-andrews.ac.uk/>

Please use this identifier to cite or link to this item:

<http://hdl.handle.net/10023/15555>

This item is protected by original copyright

Taking Meaning Out of Context

Essays on the Foundations of Natural Language Semantics

Matthew Dunbar Cameron

B.A., University of British Columbia, 2009

M.A., University of Western Ontario, 2010



University of
St Andrews

This thesis is submitted in partial fulfilment for the degree of PhD at
the University of St Andrews

September 2017

This dissertation is dedicated to Jennifer and Michael
sine qua non

Declaration

1. Candidate's declarations:

I, Matthew Dunbar Cameron, hereby certify that this thesis, which is approximately 64,000 words in length, has been written by me, and that it is the record of work carried out by me, or principally by myself in collaboration with others as acknowledged, and that it has not been submitted in any previous application for a higher degree.

I was admitted as a research student in September, 2013 and as a candidate for the degree of Doctor of Philosophy in September, 2013; the higher study for which this is a record was carried out in the University of St Andrews between 2013 and 2017.

Date signature of candidate

2. Supervisor's declaration:

I hereby certify that the candidate has fulfilled the conditions of the Resolution and Regulations appropriate for the degree of Doctor of Philosophy in the University of St Andrews and that the candidate is qualified to submit this thesis in application for that degree.

Date signature of supervisor

3. Permission for publication:

In submitting this thesis to the University of St Andrews I understand that I am giving permission for it to be made available for use in accordance with the regulations of the University Library for the time being in force, subject to any copyright vested in the work not being affected thereby. I also understand that the title and the abstract will be published, and that a copy of the work may be made and supplied to any bona fide library or research worker, that my thesis will be electronically accessible for personal or research use unless exempt by award of an embargo as requested below, and that the library has the right to migrate my thesis into new electronic forms as required to ensure continued access to the thesis. I have obtained any third-party copyright permissions that may be required in order to allow such access and migration, or have requested the appropriate embargo below.

The following is an agreed request by candidate and supervisor regarding the publication of this thesis:

PRINTED COPY

a) No embargo on print copy

ELECTRONIC COPY

a) No embargo on electronic copy

Date

signature of candidate

signature of supervisor

Matthew Dunbar Cameron
September 2017

Acknowledgements

There are many people who deserve thanks for helping me with this dissertation. To begin, I'd like to thank Derek Ball, my primary supervisor. Derek's gracious insight, philosophical acumen and attention to detail have taught me much about how to become a sharper thinker and express my ideas more clearly. Derek's patience, support, and encouragement have also been a welcome relief in what can sometimes be a dispiriting academic climate. There were many times when I would arrive at Derek's office feeling stressed out, confused, discouraged and uninspired, only to leave after much conversation feeling relaxed, re-engaged and reinvigorated about my academic pursuit. I'd also like to thank Josh Dever, my secondary supervisor, whose enormous intellect would be absolutely terrifying if he weren't so approachable. Talking to Josh helped me develop a better understanding of my own ideas and a deeper understanding of those I was grappling with. He also taught me a lot about how to see the bigger picture in philosophy. Both Derek and Josh helped me figure out what I was trying to say and how to say it more effectively, even if they didn't always understand why I wanted to say it. What's written in this dissertation has benefitted considerably as a result, and the shortcomings that remain are, of course, my own. I'd also like to thank Josh for hosting me as a visiting scholar at the University of Texas at Austin during the fall semester of 2015.

Next I'd like to thank the friendly and supportive philosophical community at the University of St Andrews and the Arché Philosophical Research Centre. It was truly a delight to spend time in such an intellectually stimulating and social – but also fun and casual – environment. I believe I learned as much in the seminar room as I did in the pub, and I can only hope that kind of balance continues. More specifically, I'd like to thank the Arché Semantics Group, including Matthew McKeever, Ravi Thakral, Alper Yavuz, Poppy Mankowitz and Ryan Nefdt. This group helped me learn many things about syntax and semantics that helped with my dissertation, and made it enjoyable along the way. I'd also like to thank those who participated in the Arché Work in Progress group for helping me develop some half-baked ideas, including Bruno Jacinto, Josh Habgood-Coote, Andy Peet, Sebastien Becker and Matt Mendelkern (when he

was visiting from MIT). Several others in St Andrews provided stimulating discussion and feedback on various ideas in this and other work, taught me various things, and reminded me that there's more to life than just academic philosophy, including: Michael Traynor, Patrick Hummel, Pärttyli Rinne, Wolfgang Sattler, Fenner Tanswell, Joe Slater, Stefano Lo Re, Martin Lipman, Noah Friedman-Biglin, Carl Mildenburger, Paul Black, and Ryo Ito.

I would also like to thank various professors for being helpful and supportive, including: Patrick Greenough, Justin Snedeger, Ephraim Glick, Stephen Read, Simon Prosser, François Recanati, Hans Kamp, Brian Rabern, Manuel García-Carpintero, Torfinn Huvenes, Andreas Stokke, John Collins, Max Kölbel and Michael Glanzberg. I'd also like to thank the staff at the University of St Andrews, including Katie Allen and Lynn Hynd (at Arché), for much help over the years. I'd also like to thank the St Andrews and Stirling Graduate Program, Ruth A. Rafferty and those involved with the Rafferty Scholarship at the University of St Andrews, and the Royal Institute of Philosophy for providing me with funding during my postgraduate studies.

I must thank my family for supporting me in countless ways over the years. My mother, Jennifer, and father, Michael, for always encouraging me to pursue my interests and supporting me when that pursuit grew precarious. My elder sister, Katie, for being an inspiration, an academic trailblazer, and a firm supporter of my academic ambitions from day one - and for visiting me in Scotland! My sister, Jessica, for teaching me more than she knows and reminding me that life is better with laughter. And my brother, Tim, for showing me how to be creative, independent and take chances, and for helping me out through some of my toughest times.

Lastly, and most importantly, I owe a tremendous debt of gratitude to my lover and partner in crime, Hannah McDonald, for all of her love, support and encouragement over the years. I wouldn't have been able to do this without her help - and Whisky (our dog). Her patience, kindness, and understanding has helped me grow as a person.

Abstract

David Lewis articulated minimal constraints on a formal theory of natural language semantics that have been widely adopted by subsequent theorists: compositionality and sentence truth in a given context. In the process, Lewis distinguished between the compositional semantic value of an expression and its propositional content relative to a context. This dissertation consists of a series of essays in which I address several questions that arise from this distinction, including how we should understand semantic values, how we should understand propositional content, and how we should understand the relation between them.

Related to this, I explore and address a number of interesting and unresolved methodological issues that arise in relation to context-sensitivity, and provide an account of the role of speaker intentions in a formal theory of natural language semantics. Additionally, I provide a detailed analysis of the role of context in a theory of natural language semantics and its connection to various aspects of language use and communication. I also motivate coherence with syntactic structure (in the tradition of generative grammar) as an additional constraint on a formal theory of natural language semantics and assess its import for how we theorize about tense and modality and issues related to the syntax-semantics interface, including covert structure and logical form.

In broad strokes, this dissertation addresses issues concerning the aims, scope and criteria of a theory of natural language semantics. I approach these issues from the perspective of generative grammar, a theoretical framework that aims to characterize our understanding of natural language independent of its use. These essays help to clarify what should be expected of a formal theory of natural language semantics and its contribution to theories of speech acts and communication.

Table of contents

1	Introduction	1
1.1	Subject Matter	1
1.1.1	Theoretical Framework	6
1.1.2	Language and Meaning	8
1.2	Precedents	13
1.2.1	Truth-conditions	13
1.2.2	Intentions and Indices	16
1.2.3	Context, Semantic Value and Assertion	19
1.2.4	Explananda and Constraints	24
2	On the Relation Between Semantic Value and Propositional Content	29
2.1	Introduction	29
2.2	Semantic Value and Propositional Content	30
2.2.1	Two Concepts	30
2.2.2	Two Concepts Distinguished	32
2.2.3	Methodological Considerations	33
2.3	The Determination Principle	35
2.4	(Anaphoric) Pronouns	39
2.4.1	Unembedded Pronouns	39
2.4.2	Embedded Pronouns	43
2.5	Semantic Incompleteness	48
2.5.1	Covert Structure	51
2.5.2	The Role of Context	54
2.6	An Open Relationship	59
2.7	Conclusion	70
3	Speaker Intentions in the Context of Semantics	73
3.1	Introduction	73

3.2	Character-based Semantics	75
3.2.1	Kaplan's Formal Framework	75
3.2.2	King (2014) and Stokke (2010)	77
3.2.3	Accommodating Demonstratives	79
3.2.4	Salmon (2002) and Caplan (2003)	81
3.2.5	Distinct Notions of Context	83
3.3	Speaker Intentions in Context	87
3.3.1	Stokke (2010) and Predelli (2005)	92
3.3.2	King (2014) and Bach (2001)	95
3.3.3	Context in Context	97
3.4	What is Needed for Semantics	100
3.5	Conclusion	102
4	Context Two Ways: Metaphysical and Epistemic	105
4.1	Introduction	105
4.2	Two Notions of Context	106
4.2.1	Kaplan's Metaphysical Notion of Context	106
4.2.2	Stalnaker's Epistemic Notion of Context	110
4.3	Relating the Two Notions of Context	112
4.3.1	Two Ways of Construing the Relation	112
4.3.2	Truth vs. Interpretation	113
4.3.3	The Over-generation of Content	118
4.4	Re-evaluating the Relation Between the Two Notions of Context	120
4.4.1	Stalnaker's Diagonal Proposition	120
4.4.2	Kaplan's Character	123
4.4.3	Lewis's Context	125
4.5	Conclusion	127
5	Tense, Modality, and Natural Language Syntax	129
5.1	Introduction	129
5.1.1	A Short Aside: Which Theoretical Language to Use?	132
5.2	Historical Analyses of Tense	134
5.2.1	Kamp (1971)	135
5.2.2	Partee (1973)	136
5.2.3	Dowty (1982)	138
5.2.4	Cresswell (1990)	140
5.2.5	Where Are We Now?	141

5.3	Contemporary Arguments	142
5.3.1	The Argument from Structural Analogies	142
5.3.2	The Argument from Expressive Power	146
5.3.3	The Argument from Theoretical Virtue(s)	149
5.4	Syntactic Structures	152
5.4.1	Logical Form	152
5.4.2	Direction of Explanation	156
5.4.3	Applications of the Syntactic Constraint	158
References		161

Chapter 1

Introduction

1.1 Subject Matter

The capacity for language is perhaps the most striking feature of human beings. Discussing the progress of mankind, Galileo mused, “above all other stupendous inventions, what sublimity of mind was that in him, that imagined to himself to find out a way to communicate his most secret thoughts to any other person [...] by the various collection of twenty-four little letters on paper?” (1632, Sagredus, p. 88). With this, Noam Chomsky speculates, “Galileo may have been the first to recognize clearly the significance of the core property of human language, and one of its most distinctive properties: the use of finite means to express an unlimited array of thoughts” (2002, p. 45). Galileo was, of course, mistaken to focus on inscriptions given that the capacity for language predates the advent of writing systems and literacy by tens of thousands of years. Moreover, he exercises poetic license in suggesting that language was a product of human ingenuity. Aristotle might have been right that man is by nature a political animal, but in the first instance man is by nature a *linguistic animal*, for without language he would be merely a social animal, lacking the sophisticated ability to think, plan and coordinate with conspecifics afforded by our mother tongues. Nevertheless, it is undeniable that language, by way of a limited number of expressions and combinations thereof, gives rise to a special ability to express thoughts – unboundedly many – which can be, and are, communicated to and understood by others.

One of the central preoccupations of the philosophy of language, and its twin sister, theoretical linguistics, is to explain what language is and how it works, and, in turn, what contribution it makes to our rich socio-political lives. Rob Stainton succinctly describes language as “a system of symbols we know and use”, but the philosophically

loaded term ‘know’ raises a host of epistemological issues that will not be of concern in what follows.¹ Instead, I propose to use the more epistemically neutral description of language as *a system of symbols that we understand and use* as a starting point for the present inquiry, which, at the most general level, seeks to gain insight into the nature of this system of symbols and our understanding of it, as well as how we put it to use in the myriad ways we do.

Stainton’s description of language, even as I’ve reformulated it, is still too broad, however, in that it covers a range of stipulated, formal languages, such as propositional logic, lambda calculus, Java, C++, etc., used in philosophy, mathematics, computer science and other related disciplines. These formal languages are systems of symbols that at least some of us understand and use, but they will also not be of concern in what follows. My focus will be restricted to what Paul Pietroski calls “a natural language,” namely, “one that human children can acquire, in the normal course of development, given a course of experience that is not atypical for members of the relevant linguistic community.”² Thus, in the normal course of my childhood development, given a course of experience common to many in Calgary, Alberta (and Western Canada, more generally), I acquired – reflexively, and with minimal explicit instruction – a variant of (Canadian) English, as opposed to, say, Charity, a programming language developed at the University of Calgary not long after my birth.³ Had I instead spent my infancy in, say, Jena, Germany, I would have acquired a variant of German, but not the Begriffsschrift, a formal language developed at the University of Jena in the 1870s. Indeed, to the extent that a human child *could* acquire a formal language in the normal course of development, which appears to be a rather remote possibility, it would undoubtedly be the result of an extremely *atypical* (cruel and unusual) course of experience.

Matters of taste aside, there appear to be important differences between formal, non-natural, languages and natural, non-formal, languages. Unlike English, German, and other natural languages, each formal language like the Begriffsschrift is consciously designed with a specific purpose in mind, such as showing how to reduce the truths of arithmetic to those of logic. Although there are many such purposes, they generally demand precision and specificity. As a consequence, formal languages tend to eschew many apparently characteristic features of natural language, such as (lexical and

¹ Stainton (1996) p.1. For discussion of the epistemic relation to language see Chomsky (1965; 1986), Wright (1981), Evans (1981), Soames (1984), Devitt (2006) and the references therein.

² Pietroski (2005), p. 257.

³ The fact that my family’s pet dog at the time, Patty, who was exposed to a very similar course of experience, did not acquire any variant of English suggests that my brain, or mind, unlike Patty’s, has a distinct property that is sensitive to natural language. See note 12 below.

structural) homophony, polysemy, vagueness, and context-sensitivity. To the extent that they don't share the features of natural language, however, formal languages provide poor models for our understanding of natural language, since those formal systems of symbols don't reflect the systems of symbols *we understand and use*.⁴

The extent to which formal languages *do* share features of natural language is an empirical question. The syntactic and semantic properties of formal languages are invariably stipulated in order to serve the tasks for which they are designed, whereas the syntax and semantics of natural languages, like the properties of any other naturally occurring phenomenon, are ultimately a matter of empirical inquiry. The nature of the system(s) of symbols that we understand and use is something to be discovered, and claims about how natural language works are therefore theoretical in nature, to be evaluated in terms of the explanation they provide of the phenomenon in question.

Describing the goals of linguistic theory, Chomsky (1964) writes,

The central fact to which any significant linguistic theory must address itself is this: a mature speaker can produce a new sentence of his language on the appropriate occasion, and other speakers can understand it immediately, though it is equally new to them. Most of our linguistic experience, both as speakers and hearers, is with new sentences; once we have mastered a language, the class of sentences with which we can operate fluently and without difficulty or hesitation is so vast that for all practical purposes (and, obviously, for all theoretical purposes), we may regard it as infinite (p. 7).

How does the system of symbols we understand and use allow for such *productivity*, the ability to produce and understand unboundedly many novel sentences we have never before considered or encountered?⁵ Further to Galileo's observation, the system appears to do so in virtue of a distinctive property: the expression of infinitely many thoughts by way of finitely many elements. That is, the system of symbols has a limited stock of

⁴ This is not to say, however, that formal *methods* are inappropriate tools for the construction of theories of natural language. To the contrary, the precision and rigor that formal methods allow are effective and conducive to naturalistic inquiry into natural language (see [section 1.1.1](#) below). It is only to say that there is no a priori reason to expect the properties of natural language to reflect those with which logicians have imbued formal languages. As Gareth Evans would say, only those who "act as intellectual Luddites" would avoid the use of formalisms in semantic theory. It is important to be clear about how to interpret such formalisms, however, including what is representationally significant and what is not, and to understand the consequences of one's interpretation. These are themes that will recur in the essays below.

⁵ To wit, 'Last night my neighbour, his son and I corralled a misplaced beaver into a dog crate so that we could return it to the river two kilometers away, from which it had apparently strayed.' (True Canadian story.)

atomic symbols that combine in systematic ways to yield unboundedly many complex symbols.⁶ Our understanding of the system must therefore include an understanding of the atomic symbols (the traditional subject matter of *lexical semantics*) and the systematic rules of their combination (*syntax*) but also the unboundedly many complex symbols generated by the system (*compositional semantics*). In other words, there are infinitely many understandings afforded by our capacity for natural language, one for each of the infinitely many complex symbols it generates. This latter component of our capacity is the principle concern of this dissertation.

But what exactly constitutes our understanding of the symbols? What do we understand when we understand natural language expressions? And how do we acquire the understandings, as human children do reflexively and with minimal explicit instruction, that are afforded by the complex symbols? Gottlob Frege believed

the possibility of our understanding propositions which we have never heard before rests evidently on this, that we can construct the sense of a proposition out of parts that correspond to words (1914, p. 79).⁷

The thought is that our understanding of the infinitely many complex symbols of our language is possible because the symbols are imbued with *senses*, or meanings: each atomic symbol has a sense, and each complex symbol has a sense that depends on the manner in which it is composed out of atomic symbols in accordance with the systematic rules for combining them that constitute the language. This is known as the principle of compositionality.⁸ In order to avoid exegetical issues surrounding Frege’s terminology, we’ll call this meaning that attaches to the symbols of natural language *linguistic meaning*. The big picture, overarching question underlying the present inquiry is simple: what is linguistic meaning?

There are different ways of addressing this question. In particular, many theorists adopt a distinction between descriptive semantics, or just semantics, and foundational

⁶ Gareth Evans succinctly describes the mechanism at work in any such system: “Infinity in language results from recursiveness; syntactic and semantic rules which operate upon their own output” (1981, p. 334).

⁷ I interpret Frege to be referring roughly to sentences with ‘propositions’ in light of (a) the surrounding text (“the proposition ‘Etna is higher than Vesuvius’ [...] contains the name ‘Etna’, which occurs also in other propositions, e.g., in the proposition ‘Etna is in Sicily’ [...] we find the same word in two propositions” p. 79) and (b) the fact that propositions per se cannot be heard.

⁸ To be sure, this is an informal characterization of the principle. At the same time, it is highly theoretical in that it claims that *senses* compose in the case of language. One can, of course, retain the compositionality principle without adopting Frege’s theory of sense. For more formal definitions, and detailed discussion thereof, see Zadrozny (1994), Dever (1999), Szabó (2000), Pagin and Westerståhl (2010a; 2010b) and the references therein.

semantics, or metasemantics. Robert Stalnaker, for example, describes the former as a theory that

assigns *semantic values* to the expressions of the language, and explains how the semantic values of the complex expressions are a function of the semantic values of the their parts (1997, p. 535; original emphasis).⁹

By contrast, foundational semantics addresses questions

about what the facts are that give expressions their semantic values, or more generally, about what makes it the case that the language spoken by a particular individual or community has a particular descriptive semantics (p. 535).

Stalnaker's distinction closely echoes one made earlier by David Lewis (1970):

I distinguish two topics: first, the description of possible languages or grammars as abstract semantic systems whereby symbols are associated with aspects of the world; and second, the description of the psychological and sociological facts whereby a particular one of these abstract semantic systems is the one used by a person or population (p. 19).¹⁰

Lewis's characterization of the distinction, however, unlike that of Stalnaker, appears to prejudge what a descriptive theory will deliver, namely, relations between symbols and aspects of the world. This is perhaps an example of using formal languages, wherein symbols refer to entities in a model, as a guide for theorizing about natural language. In the case of *natural* language, however, you can't decide ahead of time what counts as semantic.

Stalnaker appears to be sensitive to this issue, and provides a more neutral characterization of the distinction by invoking the notion of a semantic value, which he describes as follows.¹¹

⁹ This is, of course, precisely the manner suggested by Frege.

¹⁰ Lewis warns, "Only confusion comes of mixing these two topics" (p. 19). We'll see below, however, that Lewis's conception of language marks no significant difference between natural and formal languages, and I would suggest that confusion also comes from mixing these two kinds of languages.

¹¹ David Kaplan draws a similar distinction between semantics and metasemantics:

The fact that a word or phrase *has* a certain meaning clearly belongs to semantics. On the other hand, a claim about the *basis* for ascribing a certain meaning to a word or phrase does not belong to semantics [...] because it is a fact *about* semantics [it is] part of the *Metasemantics* (1989b, pp. 573-574; original emphasis).

The term “semantic value,” as I am using it, is a general and neutral term for whatever it is that a semantic theory associates with the expressions of the language it interprets (Stalnaker 1997, p. 535).

This, of course, leaves open a number of very important questions, including: *What is a semantic value and how are semantic values individuated? Why is whatever is a semantic value a semantic value?* (i.e., *What are the constraints on a semantic value and what is a semantic value supposed to do?*) And *why does an expression have the semantic value it has rather than some other semantic value?* These are questions about the foundations of natural language semantics, and they will be addressed in the essays that comprise this dissertation.

1.1.1 Theoretical Framework

I will be approaching questions about the foundations of natural language semantics from the perspective of generative grammar, a theoretical framework for investigating natural language developed principally by Noam Chomsky beginning in the late 1950s and continuing on to the present day. Not unlike Frege, Chomsky applied newly developed techniques and concepts from mathematics to the study of natural language in order to formally characterize its properties in terms of a system of abstract rules and principles. Unlike Frege, however, Chomsky also took a psychologicistic stance towards natural language:

Generative grammar [...] is concerned with those aspects of form and meaning that are determined by the “language faculty,” which is understood to be a particular component of the human mind (Chomsky, 1986, p. 3).¹²

This is more in line with how I think the distinction should be drawn, since I take metasemantics to be more general than just the question of why a speaker (or linguistic community) speaks the language they do, and to include the questions that arise surrounding any particular assignment of meanings. In particular, I would include the question of what a meaning is among those of metasemantics.

¹² As alluded to above, there is good reason to believe there is “some property of the mind/brain that differentiates humans from rocks, birds, or apes.” Chomsky’s theoretical project attempts to isolate and explain this property:

We try to determine what is the system of knowledge that has been attained and what properties must be attributed to the initial state of the mind/brain to account for its attainment. Insofar as these properties are language-specific, either individually or in the way they are organized and composed, there is a distinct language faculty (1986, p. 4).

Note the empirical, rather than a prior, nature of the research program.

The system of abstract rules and principles is therefore taken to model the underlying understanding of language users, conceived of as a psychological state of the mind or brain described at certain level of abstraction.

Chomsky's framework displaced the structural linguistic framework that had previously dominated inquiry into natural language, rooted in behavioural psychology as advanced by B.F. Skinner.¹³ In terms of theoretical orientation, "the shift of focus was from behavior or the products of behaviour to those states of the mind/brain that enter into behavior" (ibid., p. 3). This shifted the subject matter of linguistic inquiry from the *performance* of language users to their underlying *competence*. As Chierchia and McConnell-Ginet (1990) note, the upshot is that

linguistics cannot be limited to the documentation of what is said and how it is interpreted [...] any more than physics can limit its subject matter to the documentation of measurements and meter readings of directly observable physical phenomena. The linguistic knowledge we seek to model, speakers' competence, must be distinguished from their observable linguistic behavior (p. 2).

This is significant given that many regard certain linguistic behaviour, such as native speakers' judgments, as the primary, if not exclusive, evidence to which a semantic theory is accountable. Thus, Jason Stanley and Zoltan Szabó (2000) write, "accounting for our ordinary judgments about the truth-conditions of various sentences is the central aim of semantics. [...] these judgments are the data of semantic theorizing" (p. 240).¹⁴ I disagree on two counts. First, as I've already suggested, I take the central aim of semantics to be accounting for our understanding of the meaning properties of natural language expressions. While our judgments about the truth conditions of various sentences undoubtedly reflect such understanding, they presumably reflect much else besides, including our knowledge and beliefs, expectations, biases, memory limitations and various other cognitive abilities. As instances of performance, speaker judgments are the result of complex interactions of various cognitive competencies of which linguistic competence is only one. To be sure, then, in the second instance, such judgments constitute data – though rather noisy data – that bear on semantic

¹³ The tectonic shift, as it were, occurred with Chomsky's (1959) review of Skinner's (1957) *Verbal Behavior*. Besides revolutionizing modern theoretical linguistics, Chomsky (1959) also marked the advent of cognitive psychology.

¹⁴ Similar remarks can be found in Neale (2004) and Recanati (2004).

theorizing, but so do facts about how the capacity for language is acquired, impaired, lost and shared cross-linguistically.¹⁵

1.1.2 Language and Meaning

The notion of language deployed in the framework of generative grammar, Chomsky (1986) notes, “depart[s] from the common sense notion in several ways,” since our “common sense notion of language has a crucial sociopolitical dimension” (p. 15), as well as “a normative-teleological element that is eliminated from scientific approaches” (p. 16). Chomsky (2000) elaborates that scientific approaches, and naturalistic inquiry more generally, aim to explain naturally occurring phenomena by uncovering the underlying causal mechanisms responsible for their manifestation. In order to do so with precision and efficiency, scientific approaches deliberately introduce specific concepts construed and assigned meaning within a given theoretical framework. These stipulated concepts are then revised and modified as inquiry progresses in light of new discoveries and broader understanding of the target phenomena.

Pre-theoretic concepts, denoted by terms such as ‘language’ and ‘meaning’, are ill-suited for naturalistic inquiry insofar as their individuation conditions are determined relative to human concerns, attitudes, interests, intentions, historical usage/understanding, etc. Our common-sense concepts have rather peculiar and messy properties that do not lend themselves to the precision of scientific approaches. To the extent possible, naturalistic inquiry divests itself from the distorting confines of human concerns, interests, etc. by introducing explicit concepts in pursuit of explanations of naturally occurring phenomena in order maintain a neutral and unbiased perspective.¹⁶ There is no more reason to expect that theoretical understanding of natural language will be attainable in terms of the vocabulary of the vulgar, as it were, than that of organic chemistry.¹⁷

The theoretical notion of language invoked in generative grammar is that of an *I-language*: “some element of the mind of the person who knows the language, acquired

¹⁵ In the absence of theoretical prejudice it is clear that, in principle, *any and all* data could come to bear on a theory of semantics. See Antony (2003) for discussion.

¹⁶ These considerations also underlie Chomsky’s skepticism regarding referential semantics (i.e., Lewis’s “real semantics” – see s. 1.2.1) according to which bits of language (e.g, names, nouns, etc.) pick out objects in the world (of non-symbols). He writes: “What we take as objects, how we refer to them and describe them, and the array of properties with which we invest them, depend on their place in a matrix of human actions, interests, and intent in respects that lie far outside the potential range of naturalistic inquiry” (2000, p. 21).

¹⁷ Indeed, it is for this reason that formal methods are entirely appropriate for inquiry into natural language on account of the precision and explicitness that they afford – provided what they are (and are not) modeling (i.e., their interpretation) is made clear.

by the learner, and used by the speaker-hearer” such that “[f]or H to know the language L is for H’s mind/brain to be in a certain state” (1986, p. 22). On this conception of language,

The statements of a grammar are statements of the theory of mind about the I-language, hence statements about structures of the brain formulated at a certain level of abstraction from mechanisms. These structures are specific things in the world, with their specific properties (p. 23).

Again, we need not let philosophical issues about knowledge detract us. In fact, precisely to avoid such controversies, and related misunderstandings of his theory, Chomsky himself adopts the neologism, *cognize*, in place of knowledge to describe the relation a speaker bears to his or her language.¹⁸ I’ll stick with understanding. The point of the I-language conception is that we are trying to properly characterize our understanding of natural language, an inherently mind-dependent subject matter. An I-language is *internal* to the *individual*, and *intensional*, in the sense of a function (i.e., a rule mapping an argument to a value).¹⁹

Chomsky’s I-language conception of language contrasts with an *E-language* conception of language – *extensional* and *external* to any particular individual. As opposed to the procedure that generates complex expressions from linguistic atoms (i.e., a function in intension), an E-language conception construes language as a set of expressions or acts. Historically, this conception of language has been widely presupposed in the study of language.²⁰ After characterizing the relevant formal apparatus for treating a pragmatic language, i.e., one that exhibits context sensitivity, for example, Richard Montague (1968) suggests we “identify a pragmatic language with the set of predicates, operation symbols, and operators that it contains. Thus a pragmatic language in

¹⁸ Cf. Chomsky (1986) chapter 4. Evans (1981) s. III, in the context of debate with Crispin Wright (1981) about the psychological reality of semantic theory, also discusses reasons that the relation speakers bear to language is not profitably understood as either belief or knowledge. See note 1.

¹⁹ Alonzo Church (1941) distinguished between a *function in intension* and a *function in extension*, the former being an operation or procedure that applies to an argument to yield a value, the latter being a set of pairs $\langle \text{argument}, \text{value} \rangle$ that characterize the applicable range and domain of a function. Importantly, two functions can be equivalent in extension without being equivalent in intension (e.g., $x.2$ and $(x.4)/2$), and the latter is the only way to finitely characterize any function that admits an infinite domain.

²⁰ Chomsky (1986) notes that the E-language conception has deep historical roots in linguistics going back at least to Ferdinand de Saussure. For example, Leonard Bloomfield, a prominent American structural linguist, defined language as “the totality of utterances that can be made in a speech community” where an utterance is defined as an “act of speech” (1926, pp. 154-5). Saussure’s (1916) conception of language is not unlike my own, however, “a system of signs in which the only essential thing is the union of meanings and sound-images, and in which both parts of the sign are psychological” (p. 15).

general is any set of such symbols” (p. 97). For Willard Van Orman Quine, to specify a language was “to specify the objective totality of well-formed sentences” (1970, p. 387). And Lewis (1975) famously asks, “What is a language?” and answers, “Something which assigns meanings to certain strings of types of sounds or of marks [...] a set of ordered pairs of strings and meanings” (p. 3).

Chomsky (1986) explains that construing natural language expressions as mere strings of symbols in the manner of Lewis is a non-starter:

without instruction or direct evidence, children unerringly use computationally complex structure-dependent rules rather than computationally simple rules that involve only the predicate “leftmost” in a linear sequence of words (pp. 7-8).

For example, the following two sentences contain the same string of symbols (contained in square brackets) that nonetheless exhibit distinct meanings on account of their distinct structural properties.

(1) I wonder who [the men expected to see them]

(2) [The men expected to see them]

In (1), the pronoun, ‘them’ can, but need not, be bound by the preceding noun phrase, ‘the men’, whereas in (2), the pronoun cannot be so bound.²¹ The animus of generative grammar in this case comes from trying to answer the question,

How does every child know, unerringly, to interpret the clause differently in the two cases? (p. 8).

The distinct meanings associated with (1) and (2) reflect that our understanding of natural language expressions is sensitive to structural properties in subtle and intricate ways. As Chomsky puts it,

The system of knowledge that has somehow developed in our minds has certain consequences, not others; it relates sound and meanings and assigns structural properties to physical events in certain ways, not others (p. 12).

We don’t just have an (extensional) understanding *of pairs* of expressions (rather than strings) and meanings, but rather, we have an (intensional) understanding *that pairs* expressions with meanings, and does so in particular and constrained ways.

According to the I-language conception,

²¹ The reason has to do with the structural composition of the respective sentences as explained by Principle B of Chomsky’s Government and Binding Theory (1986).

The rules of the language are [...] rules that form or constitute the language, like the Articles of the Constitution or the rules of chess (not a set of moves, but a game, a particular rule system) (Chomsky, 1986, p. 27).

Chomsky suggests that I-language is a more fruitful theoretical notion insofar as it remains unclear, and largely unaddressed, both how E-languages are acquired and how speakers are related to them. Lewis (1975), for example, is explicitly “not concerned with the way in which language is acquired, only with the condition of a normal member of a language using population when he is done acquiring language” (p. 26). Natural languages are acquired, however, and more importantly, are *acquirable*, unlike infinite sets of expressions. And pair entities any way you like, languages, construed as infinite sets, just ain’t in the head.²² To understand a language, on the generative grammar, I-language construal adopted here is to understand a particular rule system, namely, the one that generates the expressions, or complex symbols, of the language.

The same naturalistic considerations apply in the case of ‘meaning’. David Lewis takes his (1970) framework to provide an “explication of our ordinary discourse about meanings” (p. 32), suggesting that the goal of inquiry is to spell out in detail our common sense notion of meaning.²³ The present inquiry, on the other hand, is not in the business of sharpening our pre-theoretic notion of meaning, which is one reason for the title, *taking meaning out of context*. Colloquially, to take words “out of context” is to extract them from their original context of utterance in a manner that distorts

²² The I-language/E-language debate remains somewhat controversial and I don’t have the space (or patience) to do it justice here. I raise the issue primarily to orient the reader towards what follows, which presupposes the I-language conception. For more on these issues cf. *inter alia* Soames (1984), Chomsky (1986), Devitt and Sterelney (1999), and Chomsky (2000).

²³ The method of explication goes back to Carnap (1947):

The task of making more exact a vague or not quite exact concept used in everyday life or in an earlier stage of scientific or logical development or rather of replacing it by a newly constructed, more exact concept [...] We call [...] the task of explicating, or of giving an explication for, the earlier concept [...] it is not required that an explicatum [i.e., the new or more exact concept] have, as nearly as possible, the same meaning as the explicandum; it should, however, correspond to the explicandum [i.e., the old or more vague concept] in such a way that it can be used instead of the latter (pp. 7-8).

Lewis’s discussion does not make clear whether he takes his explication of meaning to be a more exact version of our quotidian concept of meaning, or rather a replacement concept. In either case, the present inquiry is neither in the business of making explicit our common sense notion of meaning, nor in replacing it. Rather, the goal is to develop and articulate a notion of *linguistic meaning* that is theoretically fruitful, and as such need not (and most likely won’t) correspond to any common sense notion, nor displace the common sense notion, which retains its use and applications.

their intended meaning. The notion of *linguistic meaning* that I aim to articulate and defend is a theoretical notion that goes beyond, and is not beholden to, our common sense use of the word, and is valuable insofar as it contributes to an explanation of our understanding of natural language. To earn its theoretical keep, it need not correspond to our pre-theoretic notion of meaning any more than the concept of energy in physics needs to correspond to our pre-theoretic notion of energy.²⁴

Linguistic meaning, within the present context, will be constituted by the understandings yielded by the particular rule system that constitutes a natural language – the semantic properties of natural language expressions – in light of the best evidence (see section 1.2.4). Following Stalnaker (and Lewis), I will call these *semantic values*. Given the empirical nature of the inquiry, semantic values might turn out to consist in referential relations, relations that hold between expressions and objects in the world, but I suspect they won't. Rather, for reasons already suggested, I agree with Peter Strawson that reference is a matter of *performance*, the stuff of *people*, rather than *expressions*. Strawson (1950) writes,

Meaning (in at least one important sense) is a function of the sentence or expression; mentioning and referring and truth or falsity, are functions of the use of the sentence or expression (p. 327; emphasis added).

This important sense of meaning is the one that is pursued in this dissertation. And further, Strawson's remarks reflect the understanding of the semantics-pragmatics distinction that guide my pursuit: semantics has to do with properties of expressions, which are fixed in virtue of the properties of the system that generates them, whereas pragmatics has to do with properties generated by the use of expressions, which is constrained by, but not fixed in virtue of, the properties of language.

Before venturing and defending my own account of linguistic meaning – a kind of radical minimalist semantic theory – it will be instructive to review some historical

²⁴ Neale (2016) puts the point well:

Ultimately, the theoretical notions we gravitate towards will earn their keep not by conforming to our proto-theoretic intuitions or to ordinary uses of words like 'word', 'mean', 'say', or 'refer' – which certainly help us get *started* – but in virtue of their roles within theories that are empirically substantive. Ordinary usage might be where we *begin*, but there is no reason to think that that is where we will end up (p. 231; original emphasis).

Accordingly, naturalistic inquiry into natural language is not properly a case of Carnapian explication since the concepts it invokes are stipulated (within the confines of a theoretical framework) and are neither intended to provide more explicit characterizations of pre-theoretic concepts, nor replace, or even compete, with them.

accounts of linguistic meaning in order to properly situate my contribution to this neighbourhood of the philosophy of language. A survey of the theoretical landscape is in order before I can stake my claim, and it will also allow me to introduce some of the concepts and terminology that will figure in what follows.

1.2 Precedents

1.2.1 Truth-conditions

In his (1970) *General Semantics*, David Lewis contrasts two approaches to semantics and explains his preference for one of them. According to the first approach, a semantic theory assigns to linguistic expressions symbols, or “items in the vocabulary of an artificial language we may call *Semantic Markereese*,” (p. 18; original emphasis).²⁵ According to the second approach, which Lewis prefers, a semantic theory specifies “the relations between symbols and the world of non-symbols – that is, with genuinely semantic relations” (p. 19).²⁶ As Lewis sees it,

Translation into Markereese is at best a substitute for real semantics, relying either on our tacit competence (at some future date) as speakers of Markereese or on our ability to do real semantics at least for the one language Markereese (p. 18).

The alleged problem with the first approach is, in essence, that it purports to explain the meanings of symbols by appeal to yet more symbols, and as such fails to break out of the circle of symbols in order to explain their meaningfulness. Instead, a truth-conditional approach is required whereby the meaning of an expression is provided in terms of the worldly (non-symbolic) conditions that have to obtain in order for it to be true. Such is Lewis’s dictum: “Semantics with no treatment of truth conditions is not semantics” (p. 18).²⁷

Lewis was not alone in emphasizing the centrality of truth-conditions to the project of semantic theory. According to Donald Davidson (1967b), “to give truth conditions is a way of giving the meaning of a sentence” (p. 24). Davidson argued that the primary

²⁵ For Lewis’s target, see Katz and Fodor (1963) and Katz and Postal (1964).

²⁶ This conception of “genuine” semantics was widespread, and reflected in Quine’s seminal 1960 monograph, *Word and Object*.

²⁷ While Lewis’s characterization of “real semantics” and “genuine semantic relations” seems to beg the question, his theoretical commitment appears to be honest enough: “we should be prepared to find that in a more adequate method, meanings may turn out to be complicated, infinite entities built up out of elements belonging to various ontological categories” (p. 19).

task of semantic theory is the characterization of a truth predicate for the language under investigation along the lines outlined by Alfred Tarski (1936). Such a theory would deliver as theorems the truth-conditions of every sentence in the language, a satisfactory result since,

[t]o know the semantic concept of truth for a language is to know what it is for a sentence – any sentence – to be true, and this amounts, in one good sense we can give to the phrase, to understanding the language (p. 24).²⁸

Davidson notes that certain modifications of the Tarskian task of characterizing a truth predicate will have to be made in light of the so-called context sensitivity of various aspects of natural language, but does not take the need for such modifications to undermine the task as such.²⁹

The intimate connection between truth-conditions and linguistic meaning has been widely accepted amongst theorists of language, to the point of dogmatism. To wit, the industry standard textbook, *Semantics in Generative Grammar*, begins as follows.

²⁸ Ironically, a “markarese”-esque objection was lobbied against Davidson’s approach by Foster (1964):

If formulated in English, a [Davidsonian truth-] theory of translation from L to English can pose as a theory of meaning; for anyone who, in virtue of understanding English, understands the theory can interpret the sentences of L on the basis of their translation. But such a theory is not genuinely interpretative, since the understanding of L is not derived wholly from what the theory states (p. 19).

Jeff Speaks (2017), following, Larson and Segal (1995), calls this the information problem for Davidson’s program.

²⁹ Context sensitivity has become a central topic of semantic theory in recent years, and raises methodological issues that are addressed further in essays 2-4. Interestingly, Davidson maintained that a “theory of meaning [...] is an empirical theory, and its ambition is to account for the workings of a natural language” (p. 24), while Lewis himself demurred from making “any strong empirical claim about language,” offering instead “a convenient format for semantics general enough to work for a great variety of logically possible languages” (p. 18). In this respect, Lewis’s attitude towards semantics was akin to that of Richard Montague, who famously wrote, “There is in my opinion no important theoretical difference between natural languages and the artificial languages of logicians; indeed, I consider it possible to comprehend the syntax and semantics of both kinds of languages within a single natural and mathematically precise theory” (1970b, p. 222). The passage after the semi-colon is often omitted and ignored, but it seems to crucially qualify Montague’s claim as being one about the application of formal methods to inquiry into language, rather than one about the indistinctness of syntactic and semantic properties of natural and formal languages (see s. 1.1 and n. 4 above). In any event, Montague explicitly agreed with Davidson in “regarding the construction of a theory of truth – or rather, of the more general notion of truth under an arbitrary interpretation – as the basic goal of serious syntax and semantics” (1970a, p. 188).

To know the meaning of a sentence is to know its truth-conditions. [...] A theory of meaning, then, pairs sentences with their truth-conditions.³⁰

This is a claim to the effect that an adequate semantic theory will assign truth conditions to sentences, and thereby answers the question, *what is a semantic value?* The answer owing to a venerable tradition in the philosophy of language is *truth-conditions*.

For a variety of reasons, however, the dominant position in contemporary semantics maintains a potentially even stronger requirement, namely, that a semantic theory assign *propositions* to sentences, where propositions themselves are assigned, or determine, truth conditions. Thus, a central thesis of the “mainstream view,” according to Herman Cappelen and John Hawthorne (2009): “The semantic values of declarative sentences relative to contexts of utterance are propositions” (p. 1).³¹ Kent Bach (2006) calls this requirement “Propositionalism, the conservative dogma that every indexical-free declarative sentence expresses a proposition” (p. 436).³² According to propositionism, then, a *proposition* is the answer to the question, *what is a semantic value?*

The clarity, and plausibility, of the propositionalist answer depends on what a proposition is. Traditionally, a proposition is understood to be a truth-evaluable content that needs only a possible world against which to be evaluated in order to deliver a truth value.³³ There are non-traditional understandings as well. David Kaplan (1989a), for example, famously motivated *temporal propositions*, which require a possible world and time in order to be evaluated for truth, while David Lewis (1979a) equally famously motivated *centered-worlds propositions*, which require a possible world, time and individual in order to be evaluated for truth. As these non-traditional propositions have gained increasing traction amongst contemporary theorists, it has

³⁰ Heim and Kratzer, (1998), p. 1. Similar claims can be found in other notable textbooks, e.g., Chierchia and McGinnel-Ginnet (1990): “truth conditions must surely be a necessary component of sentence meaning: there is no meaning without truth conditions” (p. 64).

³¹ Another central thesis is that “propositions instantiate the fundamental monadic properties of truth *simpliciter* and falsity *simpliciter*” (p. 1). The relativization to contexts is to account for context-sensitivity, to which I return below (s. 1.2.3) and in chapters 2 and 3.

³² Indexicals, generally speaking, are context-sensitive expressions, and hence ‘indexical-free’ amounts to context-*insensitive*.

³³ Emma Borg (2012) takes semantic minimalism to include the claim that “[s]emantic content for well-formed declarative sentences is truth-evaluable content” (p. 4) and notes that “this clause can be understood as the requirement that all well-formed sentences express propositions” (p. 4, n.3). As we’ll see, I will be defending a form of semantics that does not meet this requirement, and so I abstain from discussing the difference between possible worlds and structured propositions. For a recent discussion, see King et al. (2014).

become less clear what precise requirement propositionalism places on a semantic theory, and accordingly what constraint it places on the notion of semantic value.³⁴

A lack of consensus over the nature of propositions is one reason for avoiding propositionalism. Another has to do with the fact that propositions, on both their traditional and non-traditional understandings, are taken to answer to a variety of theoretical roles, including not just the bearers of truth values and the meanings of sentences, but also the objects of propositional attitudes such as belief, desire, doubt, etc., and the content of certain speech acts such as assertion. Propositionalism construed as the requirement that *semantic values* must fulfill *all* of these roles marks a prominent and storied research program in the philosophy of language. Insofar as it is not a priori that our understanding of natural language meets this requirement, however, propositionalism is merely one hypothesis about *semantic values*, and not one that will be pursued in what follows. Rather, in this dissertation I defend the position that *semantic values are non-propositional*. A little more history is in order to understand what this position amounts to and why I find it appealing.³⁵

1.2.2 Intentions and Indices

According to Barbara Partee (2015), one of Lewis's most significant contributions to semantics was the provision of methodological advice that "helped to revolutionize the field" and "also helped to soften up linguists to the initially very foreign idea of identifying meanings, or at least a central part of meanings, with truth conditions" (p. 331). The advice derives from Lewis's (1970) claim: "In order to say what a meaning is, we may first ask what a meaning does, and then find something that does that" (p. 22). Indeed, the notion of linguistic meaning is typically one that answers to a sort of functional "job description" defined in terms of various explanatory and theoretical roles the notion is meant to fulfill within a given theoretical framework. We return to this theoretical-functional characterization below (s. 1.2.4).

What do meanings do? Per Lewis (1970),

A meaning for a sentence is something that determines the conditions under which the sentence is true or false [...]

³⁴ For discussion see King (2003), Egan (2009), Ninan (2010a; 2010b), Brogaard (2012) and Schaffer (2012).

³⁵ Others have defended similar positions for a number of reasons. Cf. Lewis (1980), Richard (1982), Salmon (1986), Bach (1994), Pietroski (2003) and Neale (2005).

a meaning for a name is something that determines what thing, if any, the name names in various possible states of affairs, at various times, and so on. [...]

a meaning for a common noun is something that determines which (possible or actual) things, if any, that common noun applies to in various possible states of affairs, at various times, and so on (pp. 22-23).

A truth value (true or false), the thing named, and the set of things to which it applies, are the referents, or extensions, of a sentence, a name and a common noun, respectively on Lewis's account. Furthermore,

The extension of something [...] depends on its meaning and, in general, on other things as well: on facts about the world, on the time of utterance, on the place of utterance, on the speaker, on the surrounding discourse, etc. It is the meaning which determines how the extension depends upon the combination of other relevant factors (p. 23).

What meanings do, according to Lewis, is regulate dependencies between extensions, i.e., entities in the world of non-symbols, and facts about the world surrounding the use of language.

Heeding the methodological advice, we next find something that does what meanings do. Following the lead of Rudolph Carnap (1947), and Frege before him, Lewis appeals to mathematical functions, which encode dependence relationships in the most general sense. A function is a relationship between a set of one or more inputs, or *arguments*, and a set of outputs, or *values*, such that each (set of) argument(s) corresponds to exactly one value. Thus, Lewis suggests we construe the meaning of a (linguistic) symbol as

a function which yields as output an appropriate extension when given as input a package of the various factors on which the extension may depend. We will call such an input package of relevant factors an *index*; and we will call any function from indices to appropriate extensions for a sentence, name, or common noun an *intension* (p. 23; original emphasis).³⁶

³⁶ Further elaborating on the framework, Lewis suggests we

take indices as *n*-tuples (finite sequences) of the various items other than meaning that may enter into determining extensions. We call these various items coordinates of the index, and we shall assume that the *coordinates* are given some arbitrary fixed order (p. 24; original emphasis).

By construing intensions as functions from indices to extensions and indices as “packages of everything but meaning that goes into determining extensions” (p. 62), Lewis distinguishes his approach from that of Carnap, according to which intensions are functions from *state-descriptions* to extensions.³⁷ Per Carnap (1947),

A class of sentences [...] which contains for every atomic sentence either this sentence or its negation, but not both, and no other sentences, is called a **state-description** [...] because it obviously gives a complete description of a possible state of the universe of individuals with respect to all properties and relations expressed by predicates of the system. Thus the state-descriptions represent Leibniz’ possible worlds or Wittgenstein’s possible states of affairs (p. 9; original emphasis).

Lewis does not explain his reasoning for avoiding Carnap’s approach, other than to say that he’s following the suggestion of Montague (1968) and Scott (1970), though it is perhaps similar to his dismissal of markerse approaches.³⁸ Insofar as Carnap’s state-descriptions merely *represent* (possible) facts about the world, the meaning, or intension, of a linguistic symbol on Carnap’s system is determined relative to a set of symbols, namely those comprising the state-description, the representational properties of which remain to be explained in terms of “the world of non-symbols.” In any event, the upshot of Lewis’s (1970) framework is an analysis of meaning as *intension*, yielding an extension *relative to an index*, where the latter is comprised of an arbitrarily ordered set of *coordinates*, one for each relevant fact about the (possible) world in which language is used.

³⁷ In light of various features of natural and formal languages – e.g., contingent sentences, tense, personal pronouns, demonstratives, discourse markers, variables, etc. – Lewis tentatively includes eight coordinates in the index of his system: a possible world, time, place, speaker, audience, set of visible objects (that can be pointed to), part of a discourse, and infinite sequence of objects. He remains flexible about the number and kind of coordinates, however, and even speculates about possible expansions to indices. While Carnap’s characterization suggests that the structure of possible worlds represented by state-descriptions are exhausted by the expressive resources of the language, Lewis’s possible worlds are pre-, or a-, linguistic, corresponding to “a possible totality of facts, determinate in all respects” (p. 24).

³⁸ Montague (1968) notes that when “interpreting a pragmatic language” we need to “specify the set of all complexes of relevant aspects of intended possible contexts of use,” such as the time of utterance, if the language contains tense operators, or the speaker of the utterance, if the language contains first-person pronouns, and further that such complexes can be called indices, or, following Dana Scott, *points of reference* (p. 98). For his part, Scott (1970) calls the coordinates of the index “*points of reference* because to determine the truth of an expression the point of reference must be established” and because the term ‘index’ “seems to me to make them sound rather insignificant” (p. 150; original emphasis).

1.2.3 Context, Semantic Value and Assertion

Lewis (1980) discusses two roles that a grammar must fulfill if it is “to do its jobs as part of a systematic restatement of our common knowledge about our practices of linguistic communication” (p. 79) in order to motivate minimal constraints on a formal theory of natural language semantics: sentence truth in a given context and compositionality.³⁹ In the process, Lewis invokes the notion of a context, which had been introduced in Bar-Hillel (1954) and developed in Kaplan (1989a) and Stalnaker (1970; 1978), and further develops the related notion of an index, which had been introduced in Montague (1968), Lewis (1970) and Scott (1970).⁴⁰ He then goes on to outline two formally equivalent methods of achieving a compositional account of the truth conditions of sentences of natural language relative to a context before explaining why they “are not genuine alternatives” since “[w]hatever one can do, the other can do, and with almost equal convenience” (pp. 79-80).

The first theoretical role, consonant with Lewis (1970), is to specify the truth-conditions of sentences of the language in question. Persuaded by Kaplan (1989a) and Stalnaker (1970), however, Lewis (1980) acknowledges “[t]wo sorts of dependence of truth on features of context [...] *context-dependence* and *index-dependence*” (p. 79). To illustrate the difference, I’ll use an adaptation of a famous example from Stalnaker (1970). Consider two cases. In the first, gesturing towards Obama and Trump, I say, “He is a fool.” You believe correctly that Trump, but not Obama, is a fool, but you are not sure who I was referring to. In the second case, I point directly at Trump and say, “He is a fool.” You are sure that I was referring to Trump – and I was – but are unsure whether he is in fact a fool. In both cases, the truth of what I said depends on certain details surrounding my utterance, but they seem to be different kinds of dependence. In the first case, it depends on whether I was referring to Trump or Obama. Pre-theoretically, the uncertainty is about what I in fact said since there are two possible interpretations, and what I said depends on the context in which I said it. Once that uncertainty is resolved, the truth (or falsity) of what I said is relatively straightforward. In the second case, the truth of what I said depends on certain facts about the world, namely whether or not Trump is a fool. Pre-theoretically,

³⁹ In fact, Lewis (1980) talks variously about “our common knowledge about our practices of linguistic communication” (p. 79), “our common knowledge about the practice of language” (p. 80), and “our common knowledge about language” (p. 81, 83) as though the three kinds of knowledge are interchangeable. I suspect they are not, but do not have the space to take up the differences in detail.

⁴⁰ Though not published until 1989, Kaplan’s ‘Demonstratives’ manuscript had been making its way around academic philosophy circles since the early 1970s and was presented at the 1977 Pacific Division meeting of the American Philosophical Association.

since there is only one coherent interpretation of what I said, the uncertainty has to do with matters of fact about the world we inhabit.⁴¹

In more theory-laden terms, the first case has to do with uncertainty about what I *asserted*, or the *propositional content* of my utterance or assertion. In light of so-called *indexicals*, such as ‘I’, ‘you’, ‘he’, ‘them’, etc., and context-sensitive terms more generally, the propositional content of an utterance typically cannot be read off, or assigned to, the uttered sentence considered in isolation, as in the case of ‘Ice floats on water’, but must be supplemented by certain contextual information, e.g., who I was referring to with my use of the pronoun ‘he’.⁴² If I was referring thereby to Trump, the propositional content is *that Trump is a fool*, and is true just in case Trump is a fool, whereas if I was referring to Obama, I would have asserted the distinct content *that Obama is a fool*, which is true just in case Obama is a fool.⁴³ The second case has to do with the evaluation for truth of the propositional content of my utterance, *that Trump is a fool*, which depends (at least) on the possible world of evaluation. In this case, the pertinent possible world is the one of my utterance, and if Trump is a fool in that world, then what I asserted is true.⁴⁴

Whereas Lewis (1970) collected *all* of “the factors on which the extension [of a sentence] may depend” in the index, Lewis (1980) invokes distinct notions to capture these different kinds of dependence, *context* and *index*. We need to appeal to a notion of context in light of various expressions in natural language that appear to be sensitive to “features of the situation in which the words are said.”⁴⁵ Here’s what Lewis says about the notion,

Whenever a sentence is said, it is said at some particular time, place, and world. The production of a token is located, both in physical space-time and in logical space. I call such a location a *context* [...] This is not to

⁴¹ At this point, you might have uncertainty about the robustness of this distinction. After all, isn’t it a matter of fact about the world whether what I said was about Obama or Trump? The theoretical roles of context and index will be addressed further in what follows. For now, it’s worth noting that the uncertainty in the first case arises not for the speaker, but only the hearer.

⁴² The non-indexical example comes from Bar-Hillel (1954), who was an early theorist of indexical expressions. In discussing them, Bar-Hillel introduces the notion of *pragmatic context* (without doing much to define it), discusses various “pragmatic paradoxes,” and foreshadowed a recent debate by suggesting that communication via indexical expressions might be indispensable, and thus that “the investigation of indexical languages and the erection of indexical language-systems are urgent tasks for contemporary logicians” (p. 369). For more on the (in)dispensability of indexical expressions see *inter alia* Perry (1979), Lewis (1979a), and Dever and Cappelen (2013).

⁴³ This gives rise to a metaphysical question: what makes it the case that I referred to Trump rather than Obama, or vice versa? I address this question in chapter 3.

⁴⁴ I ignore for convenience the very likely possibility that necessarily, Trump is a fool.

⁴⁵ Lewis (1980), p. 81.

say that the only features of context are time, place, and world. There are countless other features, but they do not vary independently. They are given by the intrinsic and relation character of the time, place and world in question (p. 85).

The issue of context sensitivity gives rise to complications surrounding the relation between semantic values and the content of assertions that I address in chapter 2, and I address the notion(s) of context at play in a formal theory of semantics for natural language in more detail in chapters 2 - 4. For now, suffice to say that Lewis (1980) was convinced that such a theory must specify the conditions under which what we say is true, and the truth of what we say depends (in some cases) on the context of utterance, and hence that a semantic theory will only be able to provide the truth conditions of sentences relative to a context.

Once context-sensitivity is resolved by way of the context, an index is still required to encode all of the remaining factors on which an expression's extension might depend. Minimally, this will include a possible world, but it might include more. The need for additional coordinates in the index is wrapped up in Lewis's second constraint on a formal theory of natural language, namely, compositionality, and the notion of *semantic value*. "To go beyond syntax," Lewis (1980) writes, "a compositional grammar must associate with each expression an entity that I shall call its *semantic value*" (p. 83). In line with his earlier advice, Lewis begins with a job description for his notion of semantic value, and then devises something to do the job. The job description, in this case, has two parts.

First, the semantic values of some expressions, the *sentences* must enter somehow into determining whether truth-in-English would be achieved if the expression were uttered in a given context. Second, the semantic value of any expression is to be determined by the semantic values of the (immediate) constituents from which it is built, together with the way it is built from them. To the extent that sentences are built up, directly or indirectly, from sentences, the semantic values of sentences have both jobs to do. The semantic values of non-sentences have only one job: to do their bit toward determining the semantic values of the sentences. (p. 83; original emphasis).

We've already touched on the first role, but in order to make sense of the second role (which is closely related to Stalnaker's conception outlined above), we need to get clear on how Lewis takes sentences to be built up out of constituents.

Lewis's conception of the structure of expressions is influenced by what he calls "shiftiness," i.e., when "the truth (-in-English) of a sentence in a context depends on the truth of some related sentence when some feature of the original context is shifted" (p. 84). For example, (i) 'There was a beaver in the yard' seems to be true just in case (ii) 'There is a beaver in the yard' was true at some time in the past. Hence, (i) seems to be true just in case the time feature of its context is "shifted" to a previous time at which (ii) is true. In order to treat the "shifty" bits of language, Lewis suggests, "it may be good strategy for a compositional grammar to parse one sentence as a result of applying a modifier to another" (p. 84). For example, (i) would be parsed as (ii) modified by 'It has been that...'. The truth conditions of (i) would then be given in terms of the truth conditions of the corresponding sentence (ii) (now thought of as a constituent of (i)). Construed as specific locations in both logical-space and space-time, however, the features of contexts are inherently inter-related and cannot be shifted individually. Hence the need for "*indices*: packages of features of context so combined that they *can* vary independently" where unlike with contexts, there is "no requirement that the coordinates of an index should all be features of any one context" (p. 86; original emphasis).

Lewis's treatment of tense echoes that of Arthur Prior (1957), wherein a tensed sentence is analyzed in terms of a "tenseless" sentence qualified by a temporal modifier, or *operator*. A similar treatment of modality was developed in Carnap (1946; 1947) and Kripke (1963). The coordinates of Lewis's (1980) indices, which he suggests "should include time, place, world, and (some aspects of) standards of precision" (p. 84), are determined by the kinds of "shiftiness" in a language that can be analyzed in terms of operators. As such, his treatment depends on assumptions about the constituency of sentences, and hence syntactic structure. Lewis himself adopted a laissez-faire attitude when it came to syntax, maintaining, "different but equally adequate grammars might parse sentences into different constituents, combined according to different rules" (p. 83). From the perspective of generative grammar, however, the constituency of complex expressions, and hence the features of language amenable to an operator-style analysis, is a matter of empirical syntactic inquiry. In other words, the coordinates comprising

the index would appear to be constrained by syntax.⁴⁶ I return to these issues in depth in chapter 5.

Lewis's *laissez-faire* attitude was not confined to compositionality. "Semantic values," he writes, "may be anything, so long as their jobs get done," namely "telling us the conditions of truth-in-English" (p. 83). By 1980, we noted, Lewis had become convinced that such a task requires appealing to a notion of context and, in light of the "shifty" bits of language, a notion of index. Hence, "[a]n assignment of semantic values must give us the relation: sentence *s* is true at context *c* at index *i*" (p. 79). Lewis describes two distinct methods of providing such assignments. According to the first option, semantic values are *variable but simple*:

[a] value for a sentence is a function [...] from indices to truth values [...]
a sentence may have different semantic values in different contexts, and the
grammar must tell us how value depends on context. The grammar assigns
a semantic value [...] to each sentence-context pair. The value in turn is
something which, together with an index, yields a truth value (p. 90).

According to the second option, semantic values are *constant but complicated*:

A value for a sentence is a function [...] from combinations of a context
and an index to truth values [...] The semantic value of a sentence [...]
does not vary from context to context. The grammar assigns it once and
for all (p. 90).

Lewis notes that the two methods are mathematically equivalent such that, "[g]iven a grammar that assigns semantic values according to one option, it is perfectly automatic to convert it into one of the other sort" (p. 91). Unlike Stalnaker (1978) and Kaplan (1989a), then, who maintain variable but simple semantic values are more appropriate for theorizing about natural language and its role in communication, Lewis sees a

⁴⁶ It's not obvious that Lewis would agree with this claim about the empirical nature of sentence constituency, given his instrumentalist approach to semantics. For example, he writes, "[a] concise grammar for a big language – for instance, a finite grammar for an infinite language like ours – had better work on the compositional principle" (1980, p. 82). The appeal to expedience to justify compositionality reflects Lewis's modesty, or perhaps disinterest, with respect to explaining our understanding of language. He was explicit at the time that he "shall not speculate" as to whether one rather than another theory "could fit better into future psycholinguistics" (p. 83). Unlike Lewis, however, I am not content to merely *describe* our language in a concise manner, but rather, in the tradition of generative grammar, aim to model our language in a way that could *explain* our understanding of it. We noted earlier that Frege appealed to compositionality as an explanation of our ability to understand novel sentences, and likewise, in light of Chomsky's (1964) "central fact", it seems to be part of an explanation of our ability to produce novel sentences.

“distinction without a difference” (p. 91).⁴⁷ Nevertheless, Lewis acknowledged that there might be independent reasons for preferring one of the methods over the other, e.g., compatibility with our best psycholinguistic theory, even though he felt it was inappropriate to speculate given the state of understanding of such matters at the time.

With the aid of additional constraints, including strong syntactic constraints in line with the minimalist program in generative grammar, I defend a radical minimalist account of natural language semantics that decides between Lewis’s formally equivalent methods, which are, after all, only equivalent in *extension* not *intension*. On my account, semantic values are constant but complicated, in Lewis’s terms, but not necessarily as complicated as he maintained, since I will eschew the relativization to context, returning to the kind of approach found in Lewis (1970).⁴⁸ This is the second reason for my title, *taking meaning out of context*. I argue that my account is consistent with the I-language conception of generative grammar, and covers the core of the traditional explananda associated with the philosophical project of semantic theory. In doing so, I hope to clarify the contribution of a formal theory of natural language semantics to theories of speech acts, communication, action and other aspects of mind and cognition.

1.2.4 Explananda and Constraints

Recall Lewis’s (1970) methodological advice for semantic theory: ask what a meaning does and then find something that does that. The advice has certainly led to fruitful advances in semantics, but it is worth stepping back and asking a more general theoretical question: what *ought* meanings to do? What theoretical role is a notion of meaning, intended to play? While a consensus is certainly not in the offing, there is a general agreement amongst philosophers and linguists that meanings will figure to some extent in the explanations of a certain range of phenomena. Seth Yalcin (2014), for instance, describes a set of facts that a theoretical notion of linguistic meaning is constrained to help explain:

⁴⁷ I discuss Kaplan (1989a) extensively in chapters 3 and 4, and Stalnaker (1978) in chapter 4.

⁴⁸ Returning to this approach, according to which the truth conditions of expressions are given relative to an index, raises important issues including (a) what coordinates to include, (b) what to do about “contextual” phenomena, and (c) how the values of the index are constitutively determined. I address these issues in chapters 2 - 4.

PRODUCTIVITY FACTS. Speakers of a given language can understand and produce complex expressions in that language that they have never before encountered.

ENTAILMENT FACTS. Some sentences in a language entail others; some sentences are inconsistent with others. Competent speakers manifest knowledge of such facts.

COMMUNICATION FACTS. Speakers of a common language can transfer an abundant range of information systematically using that language.

ACCEPTABILITY FACTS. Some sentences or discourses in a language are judged to be unacceptable, or uninterpretable, or marked, by speakers of that language, while others are not.

TRUTH/APPROPRIATENESS FACTS. Some sentences in a language are judged to be true or appropriate by speakers relative to actual or stipulated scenarios, while others are judged false or inappropriate relative to such scenarios (pp. 73-74).

The precise manner and extent to which a notion of linguistic meaning contributes to the explanation of such facts is an open question, but historically theorists have identified each of these kinds of facts as relevant to a theory of meaning.

Frege and Chomsky, we noted earlier, were struck by productivity, and sought to explain it in terms of our understanding of the compositional properties of language. Our ability to acquire and understand a language with an unbounded range of expressions is also widely believed to require an explanation in terms of compositionality.⁴⁹ On this point, I agree with Yalcin's retort to Lewis's dictum: "Semantics with no treatment of productivity is not semantics" (p. 129). A related feature of our understanding thought to be explainable by appeal to compositionality is systematicity (or generality, as it is sometimes called), roughly speaking, that our understanding of a single complex expression is systematically related to our understanding of many other structurally

⁴⁹ Davidson (1967), for example, writes,

a satisfactory theory of meaning must give an account of how the meanings of sentences depend upon the meanings of words. Unless such an account could be supplied for a particular language [...] there would be no explaining the fact that we can learn the language: no explaining the fact that, on mastering a finite vocabulary and a finitely stated set of rules, we are prepared to produce and to understand any of a potential infinitude of sentences (p. 17).

See also Chomsky (1965) and Davidson (1965).

similar expressions.⁵⁰ For various reasons then, compositionality is assumed to be a constraint on a theory of meaning for natural language.⁵¹ I discuss some of the consequences of this constraint in chapter 2.

The evident inferential relations between distinct complex expressions reflect another important aspect of our systematic understanding of natural language. Consider the following sentences.

(3) Hannah lit the fire quickly with a wooden match.

(4) Hannah lit the fire quickly.

(5) Hannah lit the fire with a wooden match.

(6) Hannah lit the fire.

If (3) is true, then so are (4 - 6). That is, (4 - 6) are *entailed* by (3). Likewise, (6) is entailed by both (4) and (5), though none of (3 - 5) are entailed by (6). Focusing on “action sentences” such as (3 - 6), Davidson (1967b) famously motivated an analysis that imputed covert structure to complex expressions in order to explain their entailment relations, or as he put it, “showing how the meanings of action sentences depend on their structure” (p. 104). A theory of meaning seems constrained to explain the properties of expressions that allow speakers to, for example, infer (4 - 6) on the basis of their understanding of (3). Davidson’s appeal to the structure of expressions, however, including covert structure, in order to explain their semantic properties raises issues about constituency and the syntax-semantics interface, issues that are discussed in chapters 2 and 5.⁵²

Communication is widely believed by theorists of language to be natural language’s *raison d’être*. “The foremost thing we do with words,” Lewis (1980) writes, “is impart information” (p. 80).⁵³ Of course, communication can occur without the use of language, and the use of language in no way guarantees successful communication.

⁵⁰ Thus, it appears that in virtue of understanding ‘Bob shot the Sheriff’, one can also understand ‘The Sheriff shot Bob’, ‘Eric shot the Sheriff’, ‘Eric shot Bob’, etc. Systematicity is a central topic in debates about the architecture of the mind (cf. *inter alia* Fodor and Plyshyn (1988), Smolensky (1988), Cummins (1996)) and has also been discussed by philosophers of language (cf. Evans (1982), Travis (1994), Johnson (2004)).

⁵¹ Compositionality was a key constraint in the seminal formal treatment of Montague (1970). See footnote 8.

⁵² The appeal to covert structure to account for properties of natural language is widespread in both philosophy of language and linguistics. In the context of semantics, Russell (1905) is perhaps the earliest example.

⁵³ This sentiment continues to be echoed in contemporary work. Stalnaker (2014), for example, notes, “[o]ur general background story says that language is a device for conveying information” (p. 23).

Nevertheless, theoretical inquiry into natural language has long been preoccupied with explaining how communication occurs through the use of linguistic expressions. By and large, this has translated into a constraint on the semantic values of sentences being propositions. In light of considerations about communication, for example, Stalnaker has long maintained, “it is important that the output of our semantic theory be a proposition” (2014, p. 23).⁵⁴ I discuss reasons for being skeptical of this constraint in detail in chapter 2.

We noted above that some theorists take native speaker judgments about the truth or falsity of sentences as they pertain to various situations to be the core explananda of a semantic theory for natural language. Many would also include related judgments about the (un)acceptability or (in)appropriateness of sentences as they pertain to various situations. We also noted, however, that the issue is less straightforward from the perspective of generative grammar since the understanding that is proprietary to our linguistic competence is merely a component of the overall cognitive scheme that issues in such judgments. As Chomsky (1986) notes,

In general, informant judgments do not reflect the structure of the language directly; judgments of acceptability, for example, may fail to provide direct evidence as to grammatical status because of the intrusion of numerous other factors. The same is true of other judgments concerning form and meaning (p. 36).

To be sure, such judgments constitute data for semantic theorizing, but so do other judgments, such as those about the entailment relations exhibited by expressions, and other phenomena as well (e.g., acquisition data, linguistic deficit and impairment data, cross-linguistic data, etc.). All such data is just that – data – to be taken into consideration in the course of semantic theorizing, but not necessarily constraining the semantic values of complex expressions, at least not in any very direct way.

One constraint intimated above and implicit in some of the explananda just discussed, but which has received insufficient attention, is syntactic structure. In general, our best semantic theory should be consistent with our best syntactic theory. In practice, what

⁵⁴ Cappelen and Lepore (2005) make an even stronger claim:

That there is a proposition semantically expressed is presupposed by any coherent account of linguistic communication, i.e., accounts which fail to recognize a semantically expressed proposition (more or less as characterized in this book) are incoherent (p. 144).

They do not elaborate on what they take a proposition to be, except to imply that it is “the kind of thing that can take a truth value” (p. 59).

this amounts to is sensitivity to the structural composition of complex expressions as revealed by syntactic theory. Without clear theoretical justification, the assignment of semantic values to complex expressions should not posit constituents that are either not recognized by, or inconsistent with, the deliverances of syntax. The reason for such a constraint is twofold. First, the structural properties uncovered by syntax are constitutive of our understanding of language and are established independently of any parochial semantic considerations. Second, insofar as it is constrained by syntactic theory, a semantic theory makes more robust empirical hypotheses, and is thereby more falsifiable. The assumption that syntax is a constraint on semantics will be evident in what follows, and I discuss the issue in detail in chapter 5.⁵⁵

The answers to the foundational questions addressed in this dissertation are important in order for us to make sense of what we are doing when we do descriptive semantics. They can also help to clarify both the subject matter and the theoretical aim of natural language semantics. Consequently, they can shed light on the contribution that such a theory can be expected to make to related areas of inquiry in philosophy and neighbouring disciplines. Our capacity for language is leveraged pervasively in our reasoning, reflection, planning, deliberation, action, and rich social and political interactions. The guiding thought of what follows is that, to better understand the significant role that language plays in these and other areas of our lives, we need to first get clearer on what language is and how it works. In other words, to gain insight into how we *use* the system of symbols we understand in the ways that we do, we need more clarity about the system of symbols and *how we understand it such that it can be used* in the ways that we use it.

⁵⁵ For a clear and succinct summary of this constraint, see Collins (2016).

Chapter 2

On the Relation Between Semantic Value and Propositional Content

2.1 Introduction

A number of theorists have recently argued that the notions of content (understood as the object of assertion, the attitudes, agreement and disagreement) and semantic value (understood as the compositional meaning of a linguistic expression) come apart in interesting ways and maintain that a distinction needs to be drawn between them. The purpose of this chapter is to raise some issues about the status of semantic values that bear on the relation between these two notions, and sketch a way to resolve them. I take the distinction to be well motivated but argue that, once drawn, the relation is not properly understood, as others maintain, in terms of *determination relative to a context* – or if it is, that it rests on an unsatisfactory notion of context. I offer an alternative account of the relation according to which semantic value is not defined by appeal to context, and propositional content is construed as diagonal content along the lines articulated in Stalnaker (1978).

To begin, I discuss the motivation for drawing a distinction between semantic value and content in section 1, and point out some methodological considerations that can be drawn as a result. In section 2, the determination principle is introduced, according to which the semantic value of a sentence relative to a context determines the propositional content of the sentence relative to that context. I argue that the determination principle places an unduly heavy explanatory burden on the theoretical notion of context. The burden is wrought, in part, by (anaphoric) pronouns and cases of semantic incompleteness, which are discussed in detail in sections 3 and 4,

respectively. In section 5 I articulate an alternative account of the relation between semantic value and propositional content that avoids the difficulties discussed.

2.2 Semantic Value and Propositional Content

2.2.1 Two Concepts

It is natural to assume a close connection between what a linguistic expression E means and what a competent speaker says by uttering E . Take the sentence,

- (1) Noam Chomsky is a linguist

This sentence means that Noam Chomsky is a linguist. That is, (1) expresses the predication of the property of being a linguist of a particular individual called ‘Noam Chomsky’.¹ These are manifest semantic properties of the sentence. Moreover, it is plausible that a competent speaker who utters (1) says (perhaps *inter alia*) *that Noam Chomsky is a linguist* and does not say *that Noam Chomsky is a carpenter* or *that B.F. Skinner is a rat*. To keep this basic distinction explicit, between the meaning of a linguistic expression, on the one hand, and what a speaker says in uttering it, on the other hand, let’s adopt some terminology from Lewis (1980) and call the meaning of E – as fixed by its intrinsic semantic properties – its *semantic value*, and call what a speaker says by uttering E the *propositional content* of the speaker’s utterance of E .

Beyond observing a close connection between these two notions, we want to understand, or better yet explain, what the relation is between the semantic value of E and the propositional content of an utterance of E . The case of (1) suggests the relation is one of identity. But now consider a sentence such as,

- (2) He is a linguist

(2) means that an individual male – *some* individual male – is a linguist. Which male? That question cannot be answered by considering (2) in isolation because the answer depends on the use of (2) by a speaker in a particular situation. (2) could be used by a speaker to say *that Noam Chomsky is a linguist*, which is true, but it could also be used (by another speaker) to say *that B.F. Skinner is a linguist*, which is false.

¹ Alternatively, we could say that (1) means that the individual picked out by ‘Noam Chomsky’ is a member of the set of linguists, or that said individual satisfies the formula ‘ x is a linguist’. There are, of course, various ways of capturing the semantic properties of natural language sentences. The current discussion does not hinge on any one of these methods, but rather has to do with the relation of the outputs of compositional semantic theory to the (propositional/truth-conditional) content of speakers’ utterances of sentences.

Sentences like (2) that contain context-sensitive expressions, such as ‘he’ and ‘now’, can thereby be associated with multiple propositional contents. The relation between semantic value and propositional content is less clear in these cases and depends on how we associate semantic values with expressions. Semantic theories typically assign semantic values to expressions *relative to a context* in order to treat context-sensitive expressions while maintaining the identity relation between semantic value and propositional content. For example, Cappelen and Hawthorne (2009) maintain that the “semantic values of declarative sentences relative to contexts of utterances are propositions” which are “the objects of illocutionary acts; they are, e.g., what we assert and deny” (p. 1).² Thus, relative to one context, the semantic value of (2) might be *that Noam Chomsky is a linguist*, and relative to another context, it might be *that B.F. Skinner is a linguist*.

This familiar conception of the relation between semantic value and propositional content has a venerable tradition in the philosophy of language, though it has not gone unchallenged. Early dissenters included Dummett (1973), Evans (1979), Davies and Humberstone (1980), and Lewis (1980). More recently, Stanley (1997; 2002), Ninan (2010b), Yalcin (2007; 2014) Rabern (2012), and Yli-Vakkuri (2013) have argued that the notions of semantic value and propositional content come apart in various ways. Rabern (2012), for instance, argues persuasively against what he dubs the identification thesis – “The compositional semantic value of an expression is identical to its assertoric content” (p. 80) – and encourages theorists to ensure “the theoretical distinction between assertoric content and compositional [semantic] value is respected” (p.90). Rabern is explicit that his use of ‘assertoric content’ is meant to be more or less equivalent to Lewis’s ‘propositional content’ and Kaplan’s ‘what-is-said’ (p. 76), and I follow him in focusing on propositional content in its role as the object of assertion.³

² Cappelen and Hawthorne state this as one of their main theses in outlining “a framework for developing theories of propositions, illocutionary acts, and of semantic structure” (p. 1). This follows Kaplan (1989a): “[t]he content of a sentence *in a given context* is what was traditionally been called a proposition” (p. 500; emphasis added). Similar remarks are found throughout the literature, including in Stalnaker (1970), Stanley (2000), King (2003), King and Stanley (2005).

³ A theory of propositional content, more generally, aims to articulate what the objects of propositional attitudes are – the things believed, thought, imagined, dreaded, asserted, etc. – such that we conscious, cognizant creatures have mental states that are concerned with, or *about*, (features of) the external world. In a word, such a theory aims to explain our capacity for intentionality. Insofar as they represent the world as being a certain way, such objects are the bearers of truth and falsity and are taken to figure in an explanation of *inter alia* our rational, voluntary actions. Whether propositions properly construed in fact have representational properties has been the subject of recent debate. For discussion, see King et al. (2014).

2.2.2 Two Concepts Distinguished

Rabern's position is motivated primarily by how compositionality bears on the identity thesis and creates problems for the idea that propositional content composes. As noted in chapter 1, a compositional semantic theory for a language L specifies the semantic values of the complex expressions of L in terms of the semantic values of the primitive expressions of L and the manner in which they are syntactically combined to yield complex expressions of L . Thus, the semantic values of individual expressions are what those expressions contribute to the semantic values of the complex expressions in which they can occur (the possible occurrences being determined by the syntactic rules of L). If the identity thesis is correct, then the propositional content of expressions is also compositional. However, the assumption that compositionality applies to propositional content quickly breaks down in the face of distinct expressions that plausibly bear the same propositional content when considered on their own but which, when combined with another expression to make a more complex form, give rise to distinct propositional contents. "In slogan form," Rabern suggests, "we can say that the problem arises when *expressions that say the same thing embed differently*" (p. 78; original emphasis).⁴

Adapting one of Rabern's examples, consider two sentences plausibly taken to have the same propositional content in a given context:

(3) Whitehorse is the capital of the Yukon

(4) Whitehorse is the capital of the Yukon now

If uttered at time $t=2014$, both (3) and (4) appear to have the same propositional content, namely, *that Whitehorse is the capital of the Yukon at $t=2014$* . Now consider how these sentences embed:

(5) It will always be the case that Whitehorse is the capital of the Yukon

(6) It will always be the case that Whitehorse is the capital of the Yukon now

Whereas at $t=2014$, the propositional content of (5) is *that at all times $t \geq 2014$ Whitehorse is the capital of the Yukon*, the propositional content of (6) is *that at all times $t \geq 2014$ Whitehorse is the capital of the Yukon at $t=2014$* . Clearly (5) and (6) have distinct propositional contents. While the truth of (5) depends upon Whitehorse

⁴ Despite its ability to succinctly capture the tension between compositionality and the identification of semantic value and propositional content, the slogan is potentially misleading since expressions *per se*, although they have semantic values, do not *say* anything, only speakers do (cf. Strawson (1950) and Chapter 1, s. 1.1.2).

being the capital at all times of evaluation during and after 2014 (and will be made false if the capital changes seat, as it did in 1952), the truth of (6) requires only that Whitehorse be the capital in 2014 (which is true). It therefore appears that the propositional content of (3) and (4) (at $t=2014$) is not what those expressions contribute to the more complex expressions in which they occur (e.g., (5) and (6) at $t=2014$) and, hence, that propositional content cannot be identified with semantic value.⁵

2.2.3 Methodological Considerations

Rabern observes that the problem of embedding propositional contents is actually pervasive across a variety of linguistic constructions. Epistemic (embedded) modals, perspectivalist (embedded) taste claims, and directly referential treatments of indexicals in relation to the semantics of bound pronouns are some examples where “assertoric content comes into conflict with the compositionality principle” (p.79). From the perspective of compositional semantics, however, such pervasiveness is relatively innocuous since, without an “a priori constraint on semantic theorizing that a single type of entity plays both of these roles, we should not be worried when the demands of compositional

⁵ This particular example need not bear too much weight, as I want to remain neutral about how exactly to characterize propositions as well as how to analyze tense (though see Chapter 5). Rabern discusses the two sentences ‘It is raining’ and ‘It is raining now’ embedded under a PAST operator in Prior’s (1957) sense. Stanley (1997) makes a similar point in the case of utterances of ‘The President of the United States came by for a visit’ and ‘The actual President of the United States came by for a visit’ to report a surprise visit by (then) President Bill Clinton. Cf. Rabern (2012) for other plausible examples. Higginbotham (1994) makes a similar observation with respect to the embedding of specific indefinites. For example, (i) and (ii) seem to have the same propositional content:

- (i) A man came to the door yesterday
- (ii) A certain man came to the door yesterday

But then once embedded, a difference emerges:

- (iii) If a man comes to the door, give him a dollar
- (iv) If a certain man comes to the door, give him a dollar

“In the second case, but not the first,” Higginbotham notes, “we expect that the hearer has every right to ask, “Which man?” ” (p. 98). Higginbotham takes such cases to motivate a view according to which “the theory of knowledge of meaning gives us, not quite the truth conditions (or conditional truth conditions) of an utterance, but rather what a person who used the utterance to make an assertion would represent himself as believing” (p. 99). Specific indefinites are taken to be one of the rare cases where the truth conditions of an utterance and what the speaker would represent him/herself as believing do not coincide.

semantics shape “content” in a way that is different from our best theory of assertoric content” (p. 92). This is an important methodological point worth reinforcing: the aims and criteria of a compositional semantic theory are distinct from those of a theory of propositional content (e.g., as the object of assertion), and we have no principled reason to assume that a single theoretical entity will serve double duty in both theories.

The aim of a semantic theory, we noted in chapter 1, is to explain our capacity for natural language, construed as a system of symbols that we understand and use. Insofar as our understanding allows for productivity and is reflected in the inferential connections that can be discerned to hold between various distinct expressions of the language, our semantic theory aims to explain the properties of the system of symbols that make this possible. The criteria of the theory include that the assignment of semantic values to expressions be compositional and faithful to their syntactic structure, which includes the contribution expressions make when embedded in larger constructions. As Yalcin (2014) notes, “[e]mbedded contexts draw out those aspects of expressions which constitute their generative semantic contribution – their stable semantic benefaction to larger constructions” (p. 17). The notion of semantic value thus has a particular theoretical role to play in a compositional semantic theory, and as such is sensitive to the particular demands of the relevant explananda.

Similarly, the notion of propositional content has its own distinct theoretical role and attendant explanatory demands in (perhaps *inter alia*) the theories of assertion and communication. In many philosophical accounts of linguistic communication agents are taken to assert and coordinate on propositional content(s) in the course of successful communication.⁶ Here the guiding theoretical questions include: What is a speech act (e.g., assertion)? How is propositional content of a speech act shared between agents? What is the nature of propositional content such that it can be shared between agents?

⁶ We should bear in mind the possibility that propositional content may not even be needed to explain communication, and that if it is not, it might not be necessary that each sentence in context correspond to a unique propositional content. Yalcin (2014) writes,

Even allowing that linguistic communication does centrally involve some degree of coordination on items of content at some interesting level of abstraction, it remains open that coordination on items of content is a highly approximate, more-or-less affair, with perfect coordination on content not being especially important, and rarely or never happening (p. 9).

A theory accounting for and predicting inter-personal (linguistic) communication facts may not in the end need to invoke (determinate) propositional content(s). I raise this possibility merely to set it aside. In what follows I will adopt the assumption that communication involves coordinating on propositional content, and hence that semantic values bear some important relation to propositional contents.

Unlike semantic values, though, there is no obvious requirement that propositional content in its role in assertion and communication be constrained to be compositional. Productivity and systematicity concern our understanding of *expressions* not *people*. To understand *what a person says* or asserts is distinct from understanding *what her words mean* and presumably goes well beyond one's linguistic competence.⁷

Of course, although semantic value and propositional content are distinct notions, they are not necessarily distinct entities, and our best theories might ultimately call for a single theoretical entity to play both roles. However, such an identity should *result* from theorizing rather than being *stipulated* at the outset since it is not required a priori.⁸ While much theorizing has started from such a stipulation, dropping the assumption that the two notions coincide opens up a range of theoretical space for exploring how our understanding of language relates to our use of it. Our best compositional semantic theory should certainly allow for integration with our best theory of propositional content (and assertion), but the proper way for these theories to be integrated is an open question. In many ways, the enterprise of constructing a compositional semantics for natural language is still in its infancy, having grown out of the seminal formal treatments by theorists such as Montague and Davidson in the 1960s, while speech act theory itself (including that of assertion) took form only slightly earlier with Austin's illuminating analyses in the 1950s. Moreover, the focused inquiry into linguistic communication that grew out of both areas only began to take form in the 1970s with the formal work of Stalnaker, Lewis and others. In light of our current state of understanding of natural language semantics and its use, it would be a mistake to take for granted a particular relation (such as identity) between semantic value and propositional content. Rather, any such relation should be justified by reasons.

2.3 The Determination Principle

As Rabern sees it, the upshot of abandoning the identification thesis is the methodological virtue that “we can free up the theoretical notion of assertoric content from the confines of compositionality and free up compositional semantics from the confines of the theory of assertion” (p. 80). I tend to agree, but it is important to recognize

⁷ Whereas a semantic theory aims to capture our understanding of a system of symbols, a state of mind of a natural language speaker (i.e. *competence*), a theory of propositional content aims to capture the information carried by our use of those symbols, an element of a complex social interaction (i.e., an aspect of *performance*). See Davidson (1986) for an extended discussion of these issues.

⁸ See Yalcin (2014) for more discussion on why these two theoretical notions should be held apart.

that once we accept the distinction between semantic value and propositional content, it remains an open and non-trivial question how the relation between the two notions should be understood. According to Rabern,

the things we say and the meanings of our words must stand in a[n] intimate and theoretically important relationship. After all, we utter words with certain meanings (and certain syntax) in order to say the things we say. This platitude, however, does not call for the identification of the two notions – all it calls for is that the assertoric content of a sentence in a context should be systematically determined by its compositional value (p. 92).

Yalcin (2014) also endorses the idea noting, “it would suffice if sentential semantic values plus context can (often enough) systematically determine the relevant [propositional] contents” (p. 9). Accordingly, Rabern characterizes the relation according to the determination principle:

(DP) The compositional value of an expression α in context c determines the assertoric content of α in c (p. 93).

It is interesting to observe that something akin to DP is widely, though not universally, assumed in the formal semantics literature.⁹ Ninan (2010b), for example, also argues in favour of the distinction between semantic value and propositional content, but ultimately upholds the determination principle.¹⁰ Nevertheless, Rabern and others do little to motivate the determination principle and its justification remains unclear. After all, in what sense does Rabern’s platitude *call for* the propositional content of S in a context to be *determined* by the semantic value of S any more than it calls for *identification* of the two notions?

⁹ Speaking for the opposition, Neale (2004), articulating his approach to the study of natural language (and identifying a number of theorists who endorse the general approach), includes as central the following thesis.

The Underdetermination Thesis: What A *says* by uttering an unambiguous, declarative sentence X on a given occasion is underdetermined by X ’s syntax, the meanings of the words (and any other morphemes) in X (and the meanings, if any, of prosodic features of X), and the assignment of references to any referring expressions in X (p. 88).

¹⁰ In fact, Ninan (2010b) provides an informative examination of a variety of ways in which the determination principle can be spelled out in detail according to different semantic analyses of epistemic modals, tense and modality as they relate to distinct theoretical accounts of propositional content.

Setting aside the issue of justification, the merit of the determination principle turns on how we understand the key terms ‘context’ and ‘determined’. Despite (or perhaps owing to) their ubiquity, these two terms admit a variety of uses in the philosophy of language that have rendered them ambiguous and ripe for misunderstanding. Both notions can be understood in at least two distinct ways when considering aspects of semantics and communication. It will therefore be worthwhile to disambiguate both terms in order to gain a better understanding of the determination principle and why I take it to fail.

Call the first notion of context the *formal context*, a notion familiar from model-theoretic treatments of context-sensitivity dating back at least to Kaplan (1989a). A formal context is a tuple of parameters typically including at least: *agent*, *time*, *location* and *possible world*. These parameters can be understood as representing certain characteristic features of what we pre-theoretically think of as contexts of language use. Thus, *agent* corresponds to the speaker of a given utterance *u*, *time* to the time at which *u* occurs, *location* to the location where *u* takes place, and *possible world* to the world in which *u* occurs. Kaplan (1989b) thought of these as “the parameters needed to generate content” (p. 591) and hence the import of formal context as a formal, abstract object is to assign referents to context-sensitive expressions like ‘I’, ‘here’, ‘today’, etc. Among other things, this formal apparatus allows one to investigate and define the logical properties and relations of expressions of context-sensitive languages, as Kaplan himself did.

Call the second notion of context the *information context*, a notion familiar from the formal treatments of assertion and pragmatics that follow Stalnaker (1978). The information context is a representation of the epistemic situation in which an utterance takes place, typically in terms of a set of possible worlds, and captures what we pre-theoretically think of as the conversational context. In order for someone to resolve the referent of a context-sensitive expression on an actual occasion of use, they must (somehow) exploit features of the situation in which the utterance occurs *as they take it to be*. Likewise, a speaker must take such features into account when choosing their words in order for their use of language to have a chance at communicative success. The information context represents these mutually available features of the situation in which language is used *as the participants take them to be*. Whatever such features might be relevant to the conversational situation are represented by the information context, including the speaker, time and location of utterance, but also a much richer and varied range of information about the interlocutors, their roles (e.g., addressee),

their histories, the visible surrounding environment, the aims of the communicative interaction, and so on.

The information context and formal context in turn roughly correspond to two distinct types of determination, epistemic and constitutive (or metaphysical). We noted above in the case of (2) that which male is to be included among the linguists cannot be answered without appeal to the *use* of (2) by a speaker in a particular situation. Thus an individual determines, in the epistemic sense, the referent of such an expression based on the evidential background provided by the situation of use. Insofar as the information context captures the epistemic situation of interlocutors, it will represent this evidential situation and figure in an explanation of how an individual identifies or ascertains the referents of context-sensitive expressions that can be used to refer to different individuals relative to different occasions of use.

Independently of how exactly a hearer identifies the referent of a context-sensitive expression on any particular occasion, however, there remains the question of what makes it the case that the utterance of a particular expression has the referent that it does on that particular occasion. Regardless of whether or how a hearer might ascertain it, for example, what makes it the case that (2) is associated with the propositional content *that Noam Chomsky is a linguist* rather than *that B.F. Skinner is a linguist*? These questions concern what constitutively determines the referent of a use of a context-sensitive expression and, more generally, the propositional content of an expression like (2). The formal context is often taken to play an important role in answering this kind of constitutive question. Indeed, Kaplan's suggestion that we understand the tuples of the formal context as content generating parameters seems to indicate that we should understand them to be representing the metaphysical determinants of content. The role of the formal context will be assessed in section 4.2.¹¹

It makes little sense to construe determination in the epistemic sense with respect to DP, so we can reasonably assume that it concerns constitutive determination. Even so, we are left with two possible interpretations of DP depending on how we understand context:

- (DP_F) The compositional value of an expression α in *formal* context c *constitutively* determines the assertoric content of α in c .
- (DP_I) The compositional value of an expression α in *information* context c *constitutively* determines the assertoric content of α in c .

¹¹ I critically evaluate both notions of context in more detail in chapters 3 and 4.

By allowing the information context to play a constitutive role, DP_I claims that the interlocutors' appraisal of a given situation is, in part, what makes it the case that a particular propositional content is expressed in that situation. As such, DP_I effectively conflates the metaphysical and epistemic determination of propositional content. Nevertheless, these two types of determination can and should be held apart, especially since interlocutors can be mistaken about their surrounding situation. To say the least, it is a very substantial claim that epistemic information can play such a metaphysical role, but there's little evidence to suggest that Rabern intends to defend it.¹² DP_F therefore appears to be the charitable way to interpret DP, which gains support from the fact that Rabern's solution to the embedding problem is to restrict the application of compositionality to the level of Kaplanian character (a level of meaning defined in terms of the formal context), rather than to the level of content as Kaplan maintained. References to the determination principle in what follows are accordingly to be understood as references to DP_F .

An important and deep-rooted assumption implicit in the determination principle is that the compositional semantic value of each (declarative) sentence relative to a context is *sufficient* to determine a propositional content corresponding to each sentence. Call this the semantic sufficiency assumption. If this assumption is wrong, the determination principle fundamentally misrepresents the character of the relation between semantic value and propositional content, and accordingly, should be rejected. In fact, several phenomena suggest that the assumption is unwarranted, though we'll limit our focus here to problems raised by pronouns and the underappreciated though pervasive phenomenon of semantic incompleteness.¹³

2.4 (Anaphoric) Pronouns

2.4.1 Unembedded Pronouns

The formal apparatus presented in Kaplan (1989a) is insufficient to vindicate the determination principle without further development. In Kaplan's original formulation, the formal context was restricted to the "proper" parameters of *agent*, *time*, *location* and *possible world* such that the agent is located at the location at the time in the possible world (p. 509; pp. 543-544). This allowed for the assignment of referents to

¹² In the process of arguing against a close variant of DP, Recanati (forthcoming) downplays the distinction between metaphysical and epistemic determination in a way that suggests he might defend such a claim. See also Gauker (2008), Stokke (2010) and King (2014).

¹³ Cf. Taylor (2002), Bach (2005) and Soames (2010, ch. 7) for further examples.

certain context-sensitive, or indexical, expressions that Kaplan called *pure indexicals*. Here's what Kaplan says about these expressions:

Among the pure indexicals are 'I', 'now', 'here' (in one sense), 'tomorrow', and others. The linguistic rules which govern *their* use fully determine the referent for each context. [footnote omitted] No supplementary actions or intentions are needed. The speaker refers to himself when he uses 'I', and no pointing to another or believing that he is another or intending to refer to another can defeat this reference [footnote omitted] (p. 491; original emphasis).¹⁴

Pure indexicals are assigned characters that are modeled as "functions from possible contexts to contents" (p. 505). For example, whereas the character of each expression is a rule defined in terms of the appropriate parameter of the context, e.g., 'I' picks out the value of the agent parameter, the content of 'I' at a given context is simply the agent of that context, likewise for, 'here', 'now' and 'actually' (p. 546).¹⁵

Kaplan calls the other kind of indexicals *true demonstratives*, and claims these expressions

require, in order to determine their referents, an associated demonstration: typically, though not invariably, a (visual) presentation of a local object discriminated by a pointing [...]

A demonstrative without an associated demonstration is incomplete. The linguistic rules which govern the use of the true demonstratives 'that', 'he', etc., are not sufficient to determine their referent in all contexts of use. Something else—an associated demonstration—must be provided (p. 490).

An expression like 'there', for example, can potentially pick out any location (except the location of the context of use), but which particular location is not fixed by any of the features represented in the formal context. Hence, "something else" is required to determine the content.

¹⁴ In the first of the suppressed footnotes, Kaplan notes certain uses, e.g., in recorded messages and written notes, "which exhibit a special uncertainty as to the referent of 'here' and 'now'," and also observes that such expressions "suffer from vagueness regarding the size of spatial and temporal neighborhoods to which they refer." However, "[t]hese facts don't seem to me to slur the difference between demonstratives and pure indexicals." (n. 12). Subsequent theorists have disagreed. See, e.g., Perry (2001), Recanati (2004), Predelli (2005), and Stokke (2010).

¹⁵ In fact, Kaplan analyzes 'now', 'actually' and 'yesterday' as one-place sentential operators (p. 542), but these too are defined in terms of the relevant parameters of the formal context (i.e., *time*, *world*, and *time-1*, respectively). The operator analysis is irrelevant for our purposes.

Different theorists have different accounts of what the “something else” amounts to in the case of true demonstratives.¹⁶ For the sake of argument, let’s assume a simple treatment according to which the formal context is expanded to include an additional *demonstrated object* parameter. On this treatment, the content of ‘he’ in (7) in a given context is the *demonstrated object* in that context.¹⁷

(7) He is the smartest person in the room

For the moment, we can assume a similar treatment for other true demonstratives like ‘you’, ‘that’, ‘then’, etc. The general strategy on this approach is to expand the formal context to include additional parameters in terms of which the contents of the true demonstratives can be functionally derived in the manner of the pure indexicals.¹⁸

This strategy maintains Kaplan’s directly referential analysis according to which the content of indexicals, and that which they contribute to the larger expressions in which they occur, is always the particular object determined by the context of use, rather than the descriptive rules that constitute their characters. Nunberg (1993), however, offers plenty of examples of attributive uses of such expressions wherein the speaker is not referring to any particular individual, but rather a property holding of an individual. For example, a speaker might comment on the new Argentinian Pope by uttering (8), thereby saying something about the leader of the Roman Catholic Church, as opposed to the particular individual bearing the title circa the utterance.

(8) He’s usually Italian

Bezuidenhout (1997) offers further examples of the distinction between referential and attributive uses of indexicals, including the first person pronouns ‘me’ and ‘we’ and the second person singular pronoun ‘you’, observing that, “attributive uses of indexicals require us to entertain the possibility that the character of an indexical sometimes determines an [object-independent] proposition” (p. 393).¹⁹ It’s not immediately obvious, given an expression like (8), which feature of a context of use would determine

¹⁶ I discuss these different treatments in detail in chapter 3.

¹⁷ More generally, the formal context will need to include indefinitely many *demonstrated object* parameters to treat expressions that contain multiple true demonstratives. The content of the *n*th demonstrative in the construction would then be a function of the *n*th *demonstrated object* parameter.

¹⁸ Kaplan (1989a) calls this the *Indexical Theory of Demonstratives*. See Braun (1996) for a development of the view; Salmon (2002) and Caplan (2003) for discussion.

¹⁹ Nunberg and Bezuidenhout’s examples decisively refute Kaplan’s claim that “In meaningful discourse, a pronoun not used anaphorically is used demonstratively” (1989b, p. 572). See (22) below.

whether an object-dependent or object-independent proposition is to be assigned, and in the latter case which particular propositional content is to be assigned.²⁰

A Kaplanian-minded theorist might posit ambiguity here, distinguishing between bona fide referential indexicals and homophonic non-referential expressions, but such a move is *ad hoc* and undercut by a unified account of the expressions in question that captures both kinds of uses. Bezuidenhout in fact offers a unified semantic account of both indexicals and definite descriptions, and in each described case provides a detailed pragmatic account of how distinct propositions are derived. Her approach makes clear that, simply having identified a distinction between referential and attributive *uses* of certain expressions, it does not follow that the distinction must be semantically encoded in the expression *per se*.²¹ According to her, “the best way to account for the referential/attributional distinction is to treat it as semantically underdetermined which sort of proposition is expressed in a context” (p. 405).²² I return to this suggestion in section 2.6.

²⁰ In fact, Kaplan himself notes, but does not discuss, the fact that “some indexicals have both a pure *and* demonstrative use” citing an example (attributed to Michael Bennett) of a demonstrative use of ‘here’ to pick out a location on a map (1989a, p. 491). As such, though Kaplan didn’t acknowledge it, the issue affects the whole class of indexicals, both *pure indexicals* and *true demonstratives*.

²¹ A related point is made with respect to definite descriptions in Kripke (1979) in light of the distinct referential and attributional uses of such expressions identified by Donnellan (1966).

²² Bach (2001) makes a similar point in the case of complex demonstratives, observing that (v) can be used either referentially or attributionally. (See also the so-called *no demonstration no speaker reference* (NDNS) examples of complex demonstratives in chapter 1 of King (2001).)

(v) That tree is deciduous

For example, (v) could be used referentially by a speaker to predicate a property (being deciduous) of a particular demonstrated object that is a tree. But a referential use is not required inasmuch as “‘that’ can be used nondemonstratively to make descriptive rather than objectual reference [...] say to whichever tree dropped leaves on one’s windshield” (p. 33). To capture both uses simultaneously, Bach suggests we could analyze (v) as an “open proposition” that “does not specify the proposition that results from determining the identity of the tree” (p. 33). On Bach’s preferred account, “which tree this is is determined by [the speaker’s] referential intention” (p. 33). More generally, he motivates construing (complex) demonstratives in terms of constraints on use, writing,

the constraint on ‘she’ is that it be used to refer to some female, and the constraint on ‘that tree’ is that it be used to refer to some tree. The referent is “contextually determined”, i.e., determined in context (not by context) by the speaker’s referential intention (p. 32).

This distinction between content being determined in context versus by context will figure in the alternative account I sketch in section 2.6.

2.4.2 Embedded Pronouns

Returning to (7), consider how it embeds in the following:

- (9) John thinks he is the smartest person in the room

The first point to note is that the propositional content of (7) in a given context is not necessarily what it contributes to (9) in that same context. To see why, consider a sentence similar to (9) but containing a quantifying determiner phrase in subject position:

- (10) Everyman thinks he is the smartest person in the room

On one salient reading of (10), the *referential*, or *deictic*, reading, the pronoun is used to pick out a particular individual that is thought to be the smartest person in the room by all of the men. On the straightforward Kaplanian analysis of this reading, relative to a context in which Noam is the *demonstrated object*, the pronoun will contribute Noam as content in both (7) and (10), and hence (7) will contribute its propositional content in that context to the propositional content of (10) in that context.

On the other salient reading – the *bound* reading – (10) is understood to indicate that each man is such that that man thinks he himself is the smartest person in the room, and is not about any particular man *per se*.²³ The standard formal analysis captures this by treating the pronoun as a variable bound by the determiner phrase. The expression is then evaluated for truth relative to a range of assignment functions, which assign (potentially distinct) values to variables. (10) is true if each assignment of values to x that satisfies x is a man also satisfies x thinks x is the smartest person in the room, and false otherwise. But this means that ‘he’ does not contribute an object, and *a fortiori* does not contribute a demonstrated object, to (10) (on the bound reading), unlike in the putative case of (7). More importantly, a similar bound variable analysis of (9) is motivated by data concerning ellipsis.²⁴ As with the attributive uses of unembedded pronouns noted above, it is unclear what feature of a context fixes whether

²³ (10) can thus be formalized as:

(10_{RQ}) [Every x : man x] [x thinks x is the smartest person in the room]

See Neale (2004) p. 112, n. 58.

²⁴ On the bound variable analysis of (9), ‘John’ has been raised in the syntactic structure (via lambda abstraction), leaving a trace with the same index as ‘he’ such that the sentence is assigned an interpretation along the following lines.

(9_B) [John: x] [x thinks x is the smartest person in the room]

the bound, object-independent, or the referential, object-dependent, proposition is assigned to (10), and similarly for (9).²⁵

Quite apart from the bound variable analysis, however, the pronoun in (9) appears to admit at least two distinct referential readings: *deictic* and *anaphoric*. According to the *deictic* reading of (9), the pronoun refers to some male other than John, as in the following.

(9_X) John thinks he_X is the smartest person in the room (*where $x \neq \text{John}$*)

If we assume that the content of the pronoun in (9_X) in a given context is the *demonstrated object* in that context, say Tim, then relative to that context ‘he’ will contribute the same content to both (7) and (9_X), namely, Tim.

On the *anaphoric* reading of (9), however, the pronoun refers to John and is said to be coreferring with ‘John’, which we can represent via indexes as in the following.

(9₁) John₁ thinks he₁ is the smartest person in the room

Clearly, distinct propositional contents will correspond to utterances of (9₁) and (9_X) in the same context. In the case of (9₁), the propositional content will be *that John thinks John is the smartest person in the room*, while that of (9_X) will be *that John thinks Tim is the smartest person in the room*. Again, it’s not clear what feature of a context fixes whether (9) should be associated with a proposition that implicates Tim or not.

Even including a parameter for *demonstrated object(s)*, the narrow context alone cannot settle which reading of (9) – i.e., (9₁) or (9_X) – is applicable on any particular occasion of use.²⁶ And insofar as no unique propositional content is determined relative to a given context, it seems that the determination principle fails with respect to (9). In

(9_B) is true if each assignment of values to x that satisfies $x = \text{John}$ also satisfies x *thinks x is the smartest person in the room*, and false otherwise. Though (9_B) will have the same truth conditions as the anaphoric (9₁) (see below), there is strong empirical evidence that both forms are generated by the English grammar, specifically in the case of sloppy elliptical continuations (e.g., on the reading of ‘John thinks he is the smartest person in the room and so does Tim’ where Tim thinks Tim is the smartest person in the room). Regarding pronouns, Reinhart (1983) notes, “in environments which allow for sloppy-identity the sentences are always ambiguous between the bound-variable interpretation and the referential interpretation of the pronoun” (p. 69). Cf. Heim and Kratzer (1998) chapter 9 for discussion. See also King (2001) chapter 1 for data motivating bound variable treatments of complex demonstratives, specifically the so-called *quantification in (QI)* cases.

²⁵ Of course, on the bound variable analysis of (9) – i.e., (9_B) – the proposition *will* be object-dependent, but only on account of the subject ‘John’, not on account of ‘he’, and so it’s besides the point.

²⁶ A brute application of the semantics would effectively prevent (9₁) from ever being assigned to (9) relative to a context, which is obviously undesirable.

the absence of further expanding the narrow context, then, one obvious move available for the (determined) determination theorist is to appeal to structural ambiguity such that (9_1) and (9_X) are distinct syntactic structures and only the latter contains a true demonstrative.²⁷ The propositional content of (9_X) would then be determined by (the *demonstrated object* parameter of) the context, and the propositional content of (9_1) would be determined independently of context (by the anaphoric relation encoded via the indices in its syntactic structure), and hence would trivially satisfy the determination principle.

Kaplan seems to have considered this move and perhaps encouraged it, though he ultimately limited his focus to deictic uses of pronouns (and other indexicals).²⁸ In any event, the move appears to be *ad hoc*. Aside from preserving the determination principle, it's not clear that positing structural ambiguity here is well motivated since it effectively reduces to lexical ambiguity with respect to the pronoun 'he'. Yet, given "the full set of [free and bound] pronouns are morphologically identical," Jacobson (2003) notes, "it would thus be quite suspicious to treat free and bound pronouns as cases of accidental homophony" (p. 63). In a similar vein, Burge (1974) notes,

Other things equal, a theory that gives a unified formal representation to demonstrative constructions and a unified explication of their contribution to truth conditions will be regarded as superior to a theory that does not (p. 207).

Bezuidenhout (1997), we noted, provides a uniform account of indexicals, and Nowak (2014) provides convincing arguments that extant accounts that go in for accidental homophony are not empirically adequate, especially when cross-linguistic data is taken into consideration. Positing ambiguity to deal with (7) and (9), in short, is theoretically dubious from the perspective of providing a semantic theory for natural language.

It is also worth noting that accounting for structures like (9_X) , according to which two noun phrases (e.g., 'John' and 'he') are assumed to be *de jure* disjoint in

²⁷ In light of the bound reading, this move in fact requires positing a three-way ambiguity in the case of (9) between (9_X) , (9_1) and (9_B) . (See note 24.)

²⁸ Kaplan writes,

The group of words for which I propose a semantical theory includes the pronouns 'I', 'my', 'you', 'he', 'his', 'she', 'it', the demonstrative pronouns 'that', 'this', the adverbs 'here', 'now', 'tomorrow', 'yesterday', the adjectives 'actual', 'present', and others. These words have uses other than those in which I am interested (or, perhaps, depending on how you individuate words, we should say that they have homonyms in which I am not interested) (1989a, p. 489).

reference, has proved vexing for theorists and led many to abandon the anaphoric/deictic distinction. Reinhart (1983), for example, explains in detail that previous accounts of anaphora misconstrued the phenomenon by attempting to give syntactic coindexing conditions restricting which constructions admit deictic interpretations and which admit anaphoric interpretations, problematically assuming that never the twain shall meet in any one case. After pointing out the various problems faced by such an approach, Reinhart instead motivates an account whereby “the conditions on bound anaphora are the only anaphora conditions which have to be captured within the grammar” (p. 73). The distinction between deictic and anaphoric interpretations of sentences like (9), in other words, need not be linguistically encoded, according to Reinhart.

Instead, Reinhart argues, the distinction can be explained more effectively by Gricean considerations related to the maxim of manner. “In a rational linguistic exchange,” she writes, “we would expect that if a speaker has the means to express a certain idea clearly and directly, he would not choose, arbitrarily, a less clear way to express it” (p. 75).²⁹ The idea is that, since a sentence like (9) yields the same truth conditions on the anaphoric interpretation as on a bound variable analysis (see footnote 24), if a speaker did not want to express coreference as holding between ‘John’ and ‘he’, it would not be rational to use a construction such as (9). Doing so would flout the maxim of manner by being unclear and failing to avoid ambiguity, and unnecessarily so since alternative constructions that do not admit bound/anaphoric interpretations are available (e.g., ‘John thinks the linguist is the smartest person in the room’). Accordingly, Reinhart invokes the following “pragmatic strategy governing decisions about intended coreference”:

(PS) (a) *Speaker’s strategy*: When a syntactic structure you are using allows bound-anaphora interpretation, then use it if you intend your expressions to corefer, unless you have some reasons to avoid bound-anaphora.

²⁹ Reinhart elaborates as follows:

When syntactically permitted, bound anaphora, whether of R[eflexive]-pronouns or of non-R-pronouns, is the most explicit way available in the language to express coreference, as it involves referential dependency. So, when coreference is desired, this should be the preferred way to express it (p. 76)

Reflexive pronouns include ‘herself’. They are reflexive since in a sentence like ‘Hannah injured herself’ the pronoun must be interpreted as bound by its antecedent (i.e., co-referring with ‘Hannah’).

(b) *Hearer's strategy*: If the speaker avoids the bound anaphora options provided by the structure he is using, then, unless he has reasons to avoid bound-anaphora, he didn't intend his expressions to corefer (p. 76).³⁰

Linguists have adopted Reinhart's influential analysis in part because it simplifies the syntactic explanation of the phenomenon, but more importantly since "the pragmatic analysis of coreference is much closer to yielding empirically correct results than its syntactic analysis" (p. 79).³¹ Importantly, this approach allows for a uniform treatment of pronouns in terms of variables since, "the crucial distinction is between [sentences] where the pronoun can be translated as a bound variable, and all the other sentences where it cannot," and the distinction between bound and unbound is defined syntactically in terms of constituency relations, namely, c-command (p. 80). For example, Heim and Kratzer (1998) provide a variable based treatment according to which "all pronouns have the same internal syntax and semantics" (p. 242). They elaborate:

The only thing that distinguishes referring pronouns from bound-variable pronouns is that they happen to be free variables. In other words, the difference between referential and bound-variable pronouns resides in the larger surrounding LF structure, not in the pronouns themselves (p. 242).³²

Rather than distinguish between anaphoric and deictic, (e.g., (9₁) and (9_X)), anaphoric uses are subsumed under deictic uses on this approach.³³ A pronoun such as 'he' can accordingly be understood to make the same contribution to each expression in which it occurs, bound and unbound, although not an individual *per se*, but rather a property, or condition on use (roughly speaking, *an individual male*).

³⁰ Reinhart notes cases when a structure that allows bound-anaphora might be used to refer anaphorically without the speaker intending the bound-anaphora interpretation, as in the case of certain identity statements. Thus, in response to an inquiry about a particular man, a speaker might utter the sentence 'He is Zelda's husband.' In such cases the truth conditions of the bound-anaphora interpretation and the (non-bound) anaphoric interpretation come apart, since "the speaker did not intend to express a tautology but rather to claim that being Zelda's husband holds of a certain pragmatically determined individual" (p.77); the example originates with Evans (1980).

³¹ Reinhart (1983) notes Dowty (1980) and Engdahl (1980) as early examples of other linguists that appeal to pragmatic rather than grammatical rules to treat disjoint reference. Heim and Kratzer (1998) note Lasnik (1976), Partee (1978) and Lewis (1979b) as theorists who deny a theoretical difference between anaphoric and deictic uses.

³² Similarly, on Chierchia and McConnell-Ginet's (1994) account, "pronouns on their deictic use are assimilated to free variables in the syntax of [the predicate calculus] and get their value from an assignment function" (p. 130). See also May (1985).

³³ Heim and Kratzer write, "Anaphoric and deictic uses seem to be special cases of the same phenomenon: the pronoun refers to an individual which, for whatever reason, is highly salient at the moment when the pronoun is processed."

Reinhart's analysis, like Bezuidenhout's analysis, strongly suggests that pronouns are semantically underdetermined with respect to their referents and hence that expressions like (9) are underdetermined with respect to their propositional content. Furthermore, Reinhart's account provides a pragmatic answer to the metaphysical question of determination. In light of (PS), Reinhart maintains that the *speaker's intentions* constitutively determine whether the pronoun in (9) is to be understood as deictic or bound/anaphoric on any particular occasion of use – the grammar itself remains silent.³⁴ An appeal to speaker intentions would also seem to settle whether the pronoun in (7) is used referentially or attributively on a given occasion, and hence whether (7) expresses an object-dependent or object-independent proposition in that context, respectively. I return to the metaphysical question of determination in section 2.5.2. Before getting there, however, we first consider another phenomenon that creates problems for the determination principle.

2.5 Semantic Incompleteness

Cases of semantic incompleteness are those in which a syntactically complete (i.e. well-formed) sentence, even relative to a context of use, does not semantically specify the requisite detail to be evaluable for truth or falsity. In other words, the semantic value of the sentence in context does not constitute a complete proposition, and hence is semantically incomplete.³⁵ As Bach (1994) explains, “[i]n these cases the conventional meaning of the sentence determines not a full proposition but merely a propositional radical; a complete proposition would be expressed, a truth condition determined, only if the sentence were elaborated somehow” (p. 127). One way to think of the phenomenon is that a semantically incomplete sentence fails to split the set of possible worlds into two determinate subsets, namely, those relative to which the sentence is true and those relative to which it is false – in stark contrast with a (complete) proposition.

³⁴ Consider, for example, how Reinhart (1983), explains her aforementioned pragmatic strategy (PS):

Pragmatic questions are, to begin with, questions about speakers' intentions and their *use of sentences*, rather than about *properties of sentences*, and [(PS)] is stated accordingly, as a strategy governing the expression of referential intentions rather than actual coreference (Reinhart 1983, p. 79; emphasis added).

³⁵ *Propositionally incomplete* would be a better label for the phenomenon under consideration, but I use the term familiar from the literature.

To get a feel for such cases, consider a well-known kind of semantic incompleteness exhibited by sentences containing genitive constructions:

(11) Mike's motorcycle is black

(11) indicates that a relation holds between a certain individual, named 'Mike', and a particular motorcycle, but the semantic features of the sentence seem to underspecify the nature of that relation. Genitives are also known as possessives, reflecting perhaps the typical relation indicated by such expressions, namely, possession. Indeed, (11) could indicate that Mike is in possession of a motorcycle that is black. But possession is by no means necessary. A speaker could also use (11) to say that the motorcycle Mike bet money on to win a certain race is black, or that, in his small engine mechanics class, the motorcycle Mike has been instructed to work on is black. There are several possibilities available here, to be sure, but in the absence of further specification of which particular relation is being indicated as holding between Mike and the motorcycle in question, (11) cannot be evaluated for truth or falsity.

Similar considerations apply to a related example from Neale (1990):

(12) This cup is mine

Neale observes that,

depending upon the context of utterance I might use this sentence to express the proposition that (e.g.) this cup is owned by me, or that it is being drunk by me, or that it is being used by me, or that it has been assigned to me (p. 114, fn. 46).

Even if we resolve the referent of the demonstrative, 'this' (i.e. identify which cup is being claimed), and the speaker (i.e., who is claiming the cup), the possessive pronoun, 'mine' in (12) again underspecifies the relation from the range which it can be used to indicate (i.e., in what sense the cup is being claimed), and hence underdetermines conditions against which to evaluate the truth or falsity of utterances of (12).

Bach (2001) discusses a different case of semantic incompleteness:

(13) Jack and Jill climbed far enough (p. 19)

Considered in isolation, (13) does not indicate determinate conditions that must obtain for it to be true (or false) since the measure by which Jack and Jill went "far enough" remains unspecified. We can, of course, conjure up (indefinitely) many potential completions of (13) such as:

(14) Jack and Jill climbed far enough (*to get a pail of water*) [Bach's example]

(15) Jack and Jill climbed far enough (*up the hill to see the valley behind*)

(16) Jack and Jill climbed far enough (*that they became lightheaded*)

However, there is no reason to believe that a full list would exhibit any sort of theoretically tractable uniformity. This is reinforced by the fact that syntactically, 'enough' appears to optionally license either a prepositional phrase, as in (14) and (15), or a complementizer phrase, as in (16). Moreover, it would be arbitrary to maintain that any one completion has priority over any other in terms of some sort of interpretive naturalness since each completion is both coherent and cancellable in the Gricean sense. One could utter the sentence 'Jack and Jill climbed far enough, but not to get a pail of water' without contradicting oneself (and similarly for (15) and (16)).

As a final example of semantic incompleteness, consider the following sentence, adapted from an example due to Bach (1994):

(17) Mike has finished

(17) appears to be semantically incomplete inasmuch as the task, or task-related item, that Mike is indicated to have finished is not specified by the sentence. Like (13), the range of potential completions appears to be open-ended, as evidenced by the following.

(18) Mike has finished *the article*³⁶

(19) Mike has finished *working on the motorcycle*

(20) Mike has finished *reciting the alphabet*

And again, like (13), the prospect of a uniform kind of completion is a non-starter given that syntactically, 'finished' appears to optionally allow for a verb phrase or a determiner phrase.

Note, however, that (17) is both syntactically well-formed and grammatical, in contrast with the following semantically similar, but ungrammatical string of words:

(21) #Mike has completed

³⁶ In fact, (18) is still incomplete, though again well-formed, since Mike's relation to the article is still underspecified: he could have finished reading, writing, reviewing, editing, printing, publishing or doing something else involving the article.

Unlike in the case of (17), (21) requires at least the presence of a determiner phrase following the verb to be considered a syntactically well-formed sentence.³⁷ This is in spite of the fact that, conceptually speaking, a general requirement on both finishing and completing is that something (i.e., a task, activity, or a suitably related item) be finished or completed.

“That a sentence, despite being syntactically well-formed can be semantically deficient is an underappreciated phenomenon of natural language,” according to Bach (2001, p. 21). Indeed, these examples demonstrate the rather varied nature semantic incompleteness (i.e., a diversity of cases concerning, verbs, adverbs and genitives), but also that the phenomenon is, somewhat surprisingly, not especially uncommon.³⁸ Insofar as (11-13) and (17-18) exhibit semantic incompleteness, however, the phenomenon stands as a direct challenge to the semantic sufficiency assumption underlying the determination principle.

Given that propositional content is paradigmatically evaluable for truth or falsity, if the compositional semantic value of an expression α relative to a formal context c does not yield determinate truth conditions, then α cannot determine a unique propositional content in c . The challenge for advocates of the determination principle, then, is to explain how the semantic value of sentences like (11-13) and (17-18) conspire, with the aid of context, to yield a complete proposition in spite of their apparent semantic deficiency. Generally speaking, there are two potential routes of explanation: appeal to more elaborate semantic values or appeal to context. We consider these in turn.

2.5.1 Covert Structure

One strategy, familiar from the literature on quantifier domain restriction, is to posit covert context-sensitive variables in the syntax of apparently semantically incomplete sentences such that, relative to a context, they do indeed determine complete propositions. For example, Stanley (2000) claims that “the effects of context on the truth-conditional interpretation of an assertion are restricted to assigning the values to elements in the expression uttered” and that “[e]ach such element brings with it rules governing what context can and cannot assign to it” (p. 396).

Consider again the case of (17), which requires the specification of a task, or task-related item, that Mike is indicated to have finished in order to yield a corresponding

³⁷ Unlike with ‘finished’, however, syntactically, ‘completed’ does not appear to allow for a verb phrase.

³⁸ Consider as further examples: ‘Katie used a rock’, ‘Jennifer and Jessica are ready’ or ‘I’m a lot like you were’, the last a lyric from the Neil Young song, *Old Man*.

proposition. On Stanley's approach the idea would be, roughly, that the logical form of (17) includes an unpronounced element in its syntactic structure, which for our purposes we can represent as follows.

(17+) Mike has finished x

The variable in (17+) is taken to correspond to the task (or task-related item) that Mike has finished, and "the value of the relevant variable is supplied by context," according to Stanley (p. 417). In this way, an apparently semantically incomplete sentence such as (17) would in fact yield a proposition relative to a formal context.

Such an account appears *prima facie* plausible in the case of genitive constructions such as (11), where a rule might hold that context must assign a particular type of *relation* holding between Mike and the motorcycle in question. Similar considerations apply to possessive pronoun such as (12). It is also somewhat plausible in the case of (17), where a rule might hold that context can assign *either a task or a task-related item* (e.g., a drink) indicated to have been finished by Mike. To complete the account, the formal context would need to be expanded further to include a *relation* parameter and a *task (-related item)* parameter.

Nonetheless, it is implausible that the account works for all cases of semantic incompleteness. It is very unclear, for example, given the variety of completions with which it is compatible, what rule might govern the assignment of values to a covert variable in the logical form of (13), which, as (14-16) demonstrate, admits both prepositional and complementizer phrases as continuations. What feature of the context of use could plausibly be represented as a parameter in the formal context to account for (14-16)?

Perhaps (intended) goal is a plausible candidate in the case of 'enough'. For example, if the (*intended*) goal in a given context is to get a pail of water, then, relative to that context, (13) determines (14) as its propositional content. However, it's not obvious whose (intended) goal would be relevant. Getting a pail of water is presumably not the speaker's (intended) goal. What if filling a pail was not Jack and Jill's objective in climbing? (13) could still be true in such a case. It's not clear that seeing the valley behind the hill needs to be construed as a goal at all, though if it is, it's presumably not the speaker's objective, and it need not be Jack and Jill's either. Likewise, though the objective might have been to become lightheaded, it's not at all clear that that needs to be the (intended) goal of either the speaker or Jack and (/or) Jill. Who else's goals could possibly be relevant in such cases? Does the context merely "provide" a

goal? The answers to these questions are in no way obvious on Stanley's approach.³⁹ We're not given enough explanation.

Despite Stanley's claims that sentences like (17) "have certain properties *that are best explained* via the supposition that their true structures contain unpronounced pronominal elements" (p. 410; emphasis added), the covert structure approach is neither well-motivated nor the best explanation of semantically incomplete sentences. Cappelen and Lepore (2004), for example, point out that Stanley's argument would massively overgenerate the presence of covert variables (both within and across a range of constructions); lead to psychologically implausible conclusions about a range of affected expressions; predict the availability of anaphoric readings for certain expressions that do not appear to admit such readings; and predict a priori truths and falsehoods where there would appear to be none.⁴⁰ Several others have raised further criticisms, which are well documented and need not be rehearsed here.⁴¹

What seems to emerge from these criticisms is that, in the case of a semantically incomplete sentence, where additional information is needed to yield a full-blooded, truth-evaluable proposition, nothing from the standpoint of compositional semantics *per se* appears to motivate or demand positing covert indexical elements corresponding to whatever additional information is needed to yield a complete proposition (which, as noted, can vary considerably depending on the case). Perhaps it is ultimately incoherent for an interlocutor to *assert* a semantically incomplete, or non-propositional, entity in light of our best theory of linguistic communication.⁴² Nevertheless, having distinguished semantic value and propositional content, any such condition on assertion or communication need not carry over to the notion of semantic value.

Compositional semantics is restricted to assigning semantic values to the syntactic constituents of a given expression.⁴³ Plausibly, then, any covert elements posited by the semanticist need to be licensed by syntax. In fact, Stanley takes the covert variable approach to be motivated primarily by syntactic rather than semantic considerations. Nevertheless, while such a strategy has the rare merit of bringing syntactic considerations to bear on semantic analyses, it has the unfortunate burden of justifying syntactic structure that is not itself motivated by current syntactic theory. Collins

³⁹ Perhaps the answers are covert elements of the approach. However, It seems as though this tack would create an unduly proliferation of parameters to deal with the range of cases of semantic incompleteness (e.g., 'lost', 'ready', etc.).

⁴⁰ In particular, see ch. 6.

⁴¹ Cf. Bach (2000), Carston (2002), Recanati (2002), and Dever (2006) for further discussion.

⁴² Though perhaps not. There may be no important theory of assertion as such; cf. Cappelen (2011) for discussion.

⁴³ Unless it can be explained why interpretation is not required, as in the case of certain trace elements, for example, in Government and Binding Theory; cf. Chomsky (1986).

(2007) explains in detail why current theoretical accounts yield syntactic structures that are too sparse to admit the covert variables envisaged by Stanley, and thus effectively rule out the possibility of their presence. The upshot is that, “if recent generative theory is correct, Stanley’s account is incorrect, or at least lacks the support he claims for it, for there is too little syntax” (p. 826), and hence that Stanley’s “underlying assumptions about syntax are at odds with recent generative theory” (p. 829).

The irony of Stanley’s account is that he explicitly disavows revisionary treatments of syntactic structure on the part of semantic theorists and accepts that “[i]n semantic interpretation, one may never postulate hidden structure that is inconsistent with correct syntactic theory” (p. 397).⁴⁴ And yet the covert structure approach seems to do just that. Without containing bona fide constituents that require the contextual assignment of values, however, it’s not at all obvious how the semantic values of sentences like (17) are meant to interact in any systematic way with context to yield a particular propositional content in virtue of their intrinsic semantic properties. If the purported “elements in the expression uttered” do not in fact exist there would appear to be no “rules governing what context can and cannot assign” to them. Hence, it is not all obvious that the covert structure approach can rescue the determination principle.

2.5.2 The Role of Context

Cases of semantic incompleteness and (anaphoric) pronouns exhibit in distinct ways the width of the gap between the semantic value of a number of sentences, on the one hand, and the potential range of propositional contents that might correspond to them, on the other. Such cases seem to undermine the semantic sufficiency assumption implicit in the determination principle, and thereby undermine that it properly captures the relation between semantic value and propositional content. Nevertheless, the cases in the previous section focused more on the semantic values of expressions than on the formal context to which those values are typically relativized. If a semantic value is not sufficient to determine a propositional content, then the only other possibility in accord with the determination principle is that the formal context somehow fills the gap.

The formal context, we noted, is simply a tuple of parameters that represent certain characteristic features of what we pre-theoretically think of as contexts of language use.

⁴⁴ There is obviously wiggle room here given the caveat of the relevant theory being “correct” in both cases. Collins (2007), of course, is explicit about the conditional nature of his argument against Stanley’s account.

Kaplan (1989a) initially introduced such a notion for the purpose of investigating the logical properties of context-sensitive languages. Assigning values to the parameters of the formal context allows for the assignment of referents to indexicals in abstraction from actual cases of language use and thereby allows arguments containing indexicals to be assessed for validity. Call this the *logical role* of the formal context. The logical role has theoretical utility quite independently of inquiry into the workings of natural language and the logical investigation of context-sensitive languages as such is not obviously beholden to the data typically thought to bear on natural language semantics. As a result, nothing in what follows will impugn the logical role of the formal context, which retains its value as formal tool in logic and model-theoretic semantics.

Later on, however, Kaplan (1989b) also recommended construing the formal context as comprising “the parameters needed to generate content” (p. 591) and was explicit that, “[t]he contexts of [1989a] are metaphysical ” (p. 597), suggesting that the formal context be understood to represent the metaphysical determinants of content.⁴⁵ Call this the *metaphysical role* of the formal context. This conception coheres with the idea embodied in the determination principle, according to which the formal context solves for X in the following metaphysical/constitutive schema.

(NC) semantic value + X = propositional content

If this is the right way to understand the role of context, however, it appears to be doing a lot of work in the semantic theory. The capacity for pronouns to be used in bound and attributive, in addition to referential, ways indicates that Kaplan’s focus on the latter cases was artificially narrow in scope. Dealing with pronouns in full generality requires that the formal context somehow fix the propositional content of a range of complex expressions that appear non-propositional as a result of containing pronouns. Furthermore, cases of semantic incompleteness bring to light the apparent linguistic under-specification of relations, in the case of genitives and possessive pronouns, and conceptual arguments, in the case of various verbs (e.g., ‘finished’, ‘called’, ‘asked’, etc.), adverbs (e.g., ‘enough’, ‘plenty’) and adjectives (e.g., ‘ready’, ‘prepared’, ‘cleared’). Moving beyond simply “supplying” values to referential expressions clearly places a new kind of burden on the formal context.

As a formal representation of the characteristic features of situations in which language is used, however, it is far from obvious that the formal context is up to the task of the metaphysical role, filling these multifarious and irregular shaped gaps between semantic values and propositional contents. Even in the well-trodden case

⁴⁵ Some theorists appear to assume as much. Cf. Bach (2005), Stokke (2010) Rabern (2012) and King (2014). See chapter 3 for extended discussion.

of the first person, singular pronoun ‘I’, it doesn’t seem to be the case that the *agent* parameter represents that which metaphysically determines the content of the expression on a given use. Consider Kaplan uttering (22).

(22) I was wrong

The idea is supposed to be that, given the meaning (i.e., character) of ‘I’ – roughly, ‘I’ refers to the agent of the context – what makes it the case that Kaplan is the referent in the context in which (22) was uttered is the fact that Kaplan is the agent of that context. But surely it is the *act* of the speaker uttering the expression, rather than the speaker’s *identity*, that constitutively determines that it picks out the speaker. In fact, the act itself is not enough since the speaker could use ‘I’ insincerely. But neither the act nor the sincere intention are plausibly encoded in the first person, personal pronoun *per se* or else it would be an abuse of language to use ‘I’ ironically, deceptively, or in jest (e.g., if Kaplan uttered ‘I am Hume’), which it clearly is not. And Kaplan himself did not require that the formal context represent utterance events *per se*, since “logic and semantics are concerned not with the vagaries of actions, but with the verities of meanings” (1989b, p. 590). To be sure, in the absence of an actual utterance, Kaplan can be *assigned* as the content of ‘I’ in (22), but this is just to invoke the formal context in the logical role, since in no way does so assigning Kaplan (as the value of the *agent* parameter) constitutively determine that he is the content of ‘I’.⁴⁶

To be clear, the point is not that ‘I’ can be used in any way at all by the speaker as she freely intends. The lexical item ‘I’ has non-negotiable intrinsic properties that constrain its use, specifically its so-called *phi-features*: singular, first person, gender neutral.⁴⁷ Accordingly, a speaker cannot, for example, use ‘I’ to refer to an arbitrary third party. Nevertheless, depending on the prevailing attitudes of the interlocutors in a given situation, ‘I’ can be (felicitously) used to pick out individuals other than the actual speaker. In particular, in cases where, e.g., the speaker is unaware of, (innocently) mistaken about, or (intentionally) deceived about her identity, ‘I’ may be used to pick out the individual *taken to be* the speaker even if that is not the *actual* speaker.⁴⁸

⁴⁶ I discuss these issues in more detail in chapter 4.

⁴⁷ ‘I’, like all pronouns, also has a case feature – *nominative* – which restricts its syntactic distribution to the subject position, in contrast with the other singular, first person, gender neutral pronoun, ‘me’, which has *accusative* case, and so appears in object position. Case features are not relevant to the points being discussed here, so I (not me) ignore them in what follows.

⁴⁸ I discuss these issues in more detail in chapter 4. See Santorio (2012) for epistemic modal constructions in English in which ‘I’ picks out epistemic counterparts of the speaker. Also see Schlenker (2003) and Anand and Nevins (2004) for cross-linguistic data of first person pronouns

Similar considerations concerning the metaphysical question also apply in the case of demonstratives. Some theorists maintain that when a speaker utters a sentence like (7, repeated here) an accompanying demonstration by the speaker serves to fix the referent of the pronoun, as was originally suggested by Kaplan (1989a).⁴⁹

(7) He is the smartest person in the room

Of course, Kaplan noted that although an accompanying demonstration may be sufficient to fix the referent of the term, it is certainly not necessary.⁵⁰ It's less commonly acknowledged that an accompanying demonstration is not obviously sufficient either. Wittgenstein observed that, since an agent who engages in an act of pointing in fact points at several things at once, any accompanying demonstration is itself in need of interpretation.⁵¹ The multitude of factors that might potentially bear on the interpretation of such an action presumably go well beyond what we need to consider when formulating a compositional semantic theory for natural language. Moreover, this line of thought just brings us back to Quine's indeterminacy of meaning based on purely physical and behavioural phenomena.⁵² Since a demonstration does not wear an unambiguous meaning on its sleeve, as it were, it is not entirely clear how it could serve to fix the referent of a pronoun.

The very idea that an accompanying demonstration could serve to fix the reference of a demonstrative indicates an asymmetry between the speaker and hearer and betrays the underlying third personal, epistemic orientation of Kaplan's framework. Suppose that what makes it the case that the pronoun in (7) has a particular content on a given occasion of use, say Noam, is that the speaker's utterance is accompanied by a (unambiguous) demonstration of Noam. We can reasonably assume that a competent, attentive, visually unimpaired hearer who witnessed such an event would come to believe that (7) was used to say *that Noam is the smartest person in the room*. But it is not as if the speaker utters (7) and then consults her accompanying demonstration in order to discern what she said. Yet, if an accompanying demonstration in fact

picking out individuals other than the speaker when embedded under certain propositional attitude constructions

⁴⁹ Cf. also McGinn (1981).

⁵⁰ Others have argued that certain causal relations holding between the speaker and the object being referred to fix the referent of the pronoun. Cf. Devitt (1981), who instructs us to "look to the cause of the utterance to determine the reference" (p. 43). However, it is not obvious that causal relations are necessary either, especially since expressions like 'that' can be used to pick out abstract (non-causal) objects.

⁵¹ Wittgenstein (1953), section 28.

⁵² Quine (1960), chapter 2.

constitutively determines the reference of a pronoun in such a case, how else could the speaker become aware of the fact?⁵³

The more promising answer to the metaphysical question is the one that Reinhart (1983) invoked, and which Kaplan himself came around to in (1989b), namely, that the deciding factor with respect to which propositional content is associated with a given use of a sentence like (7) is essentially a matter of the *speaker's intention*. One way to preserve the determination principle, then, would be to expand narrow context to include a *speaker intention* parameter, as has been recently proposed by Stokke (2010) and King (2014). Exploring this proposal is worthwhile as it brings the role of context in semantic theory into sharp focus and raises important foundational issues. For now I simply note that, positing contextual parameters corresponding to whatever aspects of natural language and its use *appear* to be context-sensitive serves merely to catalogue such sensitivity in our formalism. As Bertrand Russell observed in a different context, “The method of ‘postulating’ what we want has many advantages; they are the same as the advantages of theft over toil. Let us leave them to others and proceed with our honest toil” (1919, p. 71). To so expand the formal context is to describe without

⁵³ Note also that the parameters of the formal context *could* be understood to represent the facts relevant for the interpretation of a given use of an indexical (rather than representing what metaphysically determines the content of an indexical on a given use). What the hearer needs to know in order to interpret a particular use of (7), for example, is the demonstrated object. If the hearer came to know that Noam was the demonstrated object of ‘he’ in utterance (7), the hearer could infer the propositional content of (7), namely, *that Noam is the smartest person in the room*. Likewise, if the hearer came to know that Kaplan was the speaker who uttered (22), and on the assumption that it was uttered sincerely, the hearer would be able to infer the propositional content of the utterance of (22), *that Kaplan was wrong*. Similarly, in the case of other indexicals, the parameters of the formal context seem to catalogue the kinds of facts needed in order to interpret particular uses of such expressions. Indeed, that is precisely why and how the formal context is useful to the theorist in its logical role, since to assign the value to a formal contextual parameter is to *assume* that it is used to pick out a particular individual, time, location, etc. One can then investigate the logical properties and relations of the resulting propositional content(s).

offering an explanation *per se* of the phenomena in question.⁵⁴ While I agree that speaker intentions provide the best answer to the metaphysical question, I take this to be a metasemantic issue that goes beyond the proper subject matter of a compositional semantic theory for natural language. I therefore disagree with those theorists who attempt to incorporate speaker intentions into semantic theory in order to address context-sensitivity. In chapter 3 I critically assess, and ultimately reject, the speaker intention parameter proposal on these grounds.

2.6 An Open Relationship

What is the relation between semantic value and propositional content? I agree with Rabern that we should give up the identification thesis, according to which the semantic value of sentence relative to a context is identified with its propositional content relative to that context. Nevertheless, I have been arguing that the relation is not properly understood, as some like Rabern (2012) maintain, in terms of *determination relative to a context*, in particular because it rests on an unsatisfactory notion of context. Even if it can be rescued, however, we need not understand the relation between semantic value and propositional content according to the determination principle, even having given up the identification thesis. Once we accept the distinction between semantic

⁵⁴ Indeed, doing so potentially obscures the distinction between linguistic and non-linguistic mechanisms that might be contributing to our judgments of context-sensitivity. What we notice when we notice varieties of context-sensitivity leaves open how much of that sensitivity is encoded linguistically and how much is the result of extra-linguistic factors. Recall Chomsky's (1986) observation that

informant judgments do not reflect the structure of the language directly; judgments of acceptability, for example, may fail to provide direct evidence as to grammatical status because of the intrusion of numerous other factors. The same is true of other judgments concerning form and meaning (p. 36).

To be sure, judgments of context sensitivity concerning language provide *evidence* for our semantic theory, but that evidence does not come labeled as *linguistic* or *non-linguistic*, since it can only be interpreted as such within a theoretical framework. For instance, consider again the case of (17) versus (21): both concern related notions of finishing and completing, which *conceptually* demand something which is finished or completed, though (21) but not (17) is *linguistically* deficient on account of a theory of syntax. Perhaps a use of (17) involves "unarticulated constituents, which are part of the statement made even though they correspond to nothing in the uttered sentence" (Recanati, 2002, p. 300). (See also, Perry (1993).) Not all cases of apparent context-sensitivity will necessarily trace back to linguistic sources. In fact, our theoretical explanation of the alleged context-sensitivity of natural language use may, and likely will, diverge from our common sense understanding as exhibited in our pre-theoretic judgments of context-sensitivity. Such is the way of explanatory theorizing.

value and propositional content, it is an open and non-trivial question how the relation between the two notions should be understood.

In this section I sketch an alternative account according to which semantic value is not defined by appeal to context, and propositional content is construed as diagonal content similar to in Stalnaker (1978). The relation between semantic value and propositional content on this account is a matter of the speaker's intention, rather than context. Although I find it an attractive account, I want to be clear that we need not think of the relation in the way to be proposed here. In particular, nothing that I've said so far forces us to adopt this account, much like nothing that Rabern says forces us to adopt the determination principle. I simply present it as an alternative option in support of my claim that distinguishing between the two notions opens up a range of theoretical space for exploring how our understanding of language relates to our use of it.

While it has long been observed that which propositional content is associated with a sentence like (7) depends on its use, it is important to note that, epistemically, it depends in different ways for the distinct participants in the situation. For the hearer, it depends on the epistemically available situational information (e.g., the hearer's beliefs about the individuals in the room in question, including their presumed genders, as well as about the speaker and the various details of the situation leading up to and including the speaker's utterance of (7)) that can be integrated with the information encoded in the linguistic form of the expression uttered (e.g., an individual male that is not the speaker is the smartest person in the room). For the speaker, however, it fundamentally depends on her intention to express a particular propositional content rather than the available situational information. The speaker's understanding of her language and the situation she finds herself serves merely to inform her choice of words, especially how many need to be used and in which arrangements in order for her interlocutor to reasonably be expected to ascertain the propositional content she intends to express.

Lepore and Fodor (2004) put the point well in the context of a discussion of Groucho Marx's famous quip,

I shot an elephant in my pajamas. How an elephant got in my pajamas I
can't imagine.

They write:

There is an inherent asymmetry between the epistemological situations of
the speaker and the hearer with respect to the role of contextual information

in the disambiguation of an utterance: the hearer can use such information but the speaker can't. That's part and parcel of the fact that the speaker, but not the hearer, has immediate (privileged, non-inferential) knowledge as to which disambiguation is the right one. It's clear how this could all be so if disambiguation supervenes on the speaker's intentions since, for better or worse, one's intentions just are the sort of things to which one's access is typically privileged. [footnote omitted] But how could a speaker (or anybody else) have immediate, non-inferential access to, as it might be, the fact that elephants don't wear pajamas? [footnote omitted]

If, in short, disambiguations supervene on facts about the background, then it would seem that one's disambiguating interpretations would always be inferences from one's grasp of such facts. But Groucho's access to the truth conditions of his utterance isn't inferred from what he knows about the background; indeed, it isn't inferred at all. That's all as it should be if disambiguation supervenes on the intentions of speakers, but we can't see how to make sense of it on any other assumption.

So, then, unless disambiguation is atypical of interpretation at large [footnote omitted], the moral would seem to be that, since the speaker's access to the interpretation of his utterance is epistemically privileged, nothing about the background of an utterance is metaphysically constitutive of its interpretation. The function of background knowledge in interpretation is (only) to provide premises for the hearer's inferences about the speaker's intentions. [footnote omitted] If the resolution of ambiguity is typical of interpretation at large, then what has content is not speech-in-a-context but speech as its speaker intends it (p. 10).⁵⁵

⁵⁵ This excerpt suppresses four footnotes (n. 19-21), the third of which is of particular relevance:

In fact, there is a good reason for supposing that the treatment of disambiguation must be homogeneous with the treatment of other kinds of context sensitivity (as, for example, indexicality). Namely, that there are cases where disambiguation itself turns on the assignment of an interpretation to a contextually sensitive item. Consider 'John said he left three days ago'. This is scope ambiguous between (roughly) he said (he left three days ago) and three days ago (he said he left). Here disambiguation turns on the interpretation of the indexical element 'ago'; viz., on whether the three days are counted from John's 'now' or from the speaker's. In such cases, one can't coherently claim both that the speaker is authoritative with respect to the disambiguation of his utterance and that he is not authoritative with respect to the interpretation of the indexical constituents (p. 18, fn. 21).

I agree with Lepore and Fodor's assessment and their background view on these matters, which they call "Cartesian":

nothing about the context of an utterance is a metaphysical determinant of its content. The only metaphysical determinants of utterance content are (i) the linguistic structure of the utterance (the syntax and lexical inventory of the expression type that it's a token of), and (ii) the communicative intentions of the speaker (p. 8)

Moreover, I take Fodor and Lepore's moral to apply to the cases we have been considering. The speaker has immediate, privileged, non-inferential, knowledge of the propositional content(s) of her use(s) of expressions containing indexicals, pronouns and those which, when considered in isolation, are semantically incomplete. These cases, unlike the famous Marx example, however, are not instances of ambiguous expressions so much as flexible expressions that constrain but underspecify the propositional content they can be used to express.⁵⁶ Despite the distinct kinds of dependence involved, what the speaker and hearer share, and what their linguistic exchange, if successful, trades on them sharing, independently of the utterance event itself, is competence with the language. This competence, however, is fixed independently of context in virtue of the interlocutors' understanding of the intrinsic properties of the system of symbols used. The context-invariant system of symbols understood by the interlocutors, I submit, is the proper subject matter of natural language semantics, but not the myriad uses to which the system can be put.

Assuming, as I will, that propositions are necessary to make sense of linguistic communication, there remains the question of how a non-propositional semantic value relates to a particular propositional content. As far as I can tell, however, insofar as this is a question about particular uses of linguistic expressions, a compositional semantic theory can rightfully leave this question unanswered. Based on the principled distinction between *properties of expressions* and *uses of expressions* the question of the relation between the two notions belongs to pragmatics rather than compositional semantics. Nevertheless, I will sketch an account of the relation inspired by Reinhart, Fodor and Lepore's answer to the metaphysical question and Bezuidenhout's (1997) suggestion that "the best way to account for the referential/attributive distinction is to treat it as semantically underdetermined which sort of proposition is expressed in a context" (p. 405). It is also inspired by Tyler Burge (1974), who writes:

⁵⁶ Several theorists have appealed to relevance of speaker intentions, including Kaplan (1989b), Bach (1992), Perry (2001), Predelli (2005), Neale (2007), Stokke (2010), King (2014), et al. Not all theorists agree on the precise role of speaker intentions, however, or on its place, if any, in a semantic theory. I discuss these issues further in chapter 3.

Sentences containing demonstrative constructions are neither true nor false apart from actual use. To evaluate ‘That is a dog’ as true or false, we need someone to use ‘that’ in the sentence referentially. For this reason, formal representations of sentences involving demonstrative constructions are open sentences. The object-language user completes the semantical interpretation of such open sentences extralinguistically – via his act(s) of reference. One might intuitively think of the language user as reaching out into the world to grasp an object to satisfy his open sentence.

Whereas the object-language user freely relies on context to complete the semantical interpretations of his sentences, the meta-theorist should not follow suit in explicating truth conditions. For no reasonable explication of the contribution of demonstrative constructions to the truth conditions of containing sentences will result from simply carrying the constructions over into the metalanguage. What is needed there is sufficient generality to account for the referential variability of these constructions (p. 212). [...]

The use of semantical theory in formalizing such interpretation yields a picture of much (I think almost all) of ordinary linguistic communication as a process in which the speaker utters open, incompletely interpreted sentences and acts in such a way as to enable the hearer to complete the interpretation of them and incorporate them into his own system of interpretation as closed sentences (p. 223).

Cases of semantic incompleteness and (anaphoric) pronouns seem to suggest that the semantic value of an expression *E* might profitably be thought of as *constraining* what can be said with any particular use of *E*, rather than as determining the propositional content of an utterance of *E*. The relation between semantic value and propositional content is one that is “open”, or indeterminate, in the absence of intentions of a speaker. As Carston (1998) explains, “the relation between the expressive tools provided by the linguistic system (words, sentences) and what they can be used to express is one-many. The particular expressive relation on any given occasion of use is determined pragmatically” (p. 9).⁵⁷ Importantly, the intentions of the speaker are constrained by both the semantic values of *E* as well as by his or her beliefs and interests, but

⁵⁷ I take Carston to be speaking of epistemic determination on the part of the hearer as being a matter of pragmatics, since I maintain that the metaphysical question is answered by appeal to the speaker’s intention. Nevertheless, if pragmatics is construed broadly as the theory of language use, then it will include the investigation of the situational features over and above those of encoded in linguistic expressions that constrain speaker intentions (e.g., doxastic and epistemic states, etc.). Neale (2016) calls this latter area of study, concerning the formation of intentions, “formatics”.

there is no systematic connection between contextual conditions and speaker intentions. In other words, there is no systematic connection, and *a fortiori* no constitutive determination relation, between contextual conditions and propositional contents.

Rabern takes himself to be following David Lewis in defending the determination principle, and yet it seems that Lewis had something else in mind besides the metaphysical question. After motivating the distinction between semantic value and propositional content, for instance, Lewis (1980) writes:

This is all very well, but it does not mean we need to equate the propositional content and the semantic value of a sentence in context. It is enough that the assignment of semantic values should somehow determine the assignment of propositional content. And it does, whether we opt for variable but simple values or for constant but complicated ones. Either way, we have the relation: sentence s is true at context c at index i . *From that we can define the propositional content of sentence s in context c as that proposition that is true at world e iff s is true at c at the index i_c^w that results if we take the index i_c of the context c and shift its world coordinate to w (p. 88; emphasis added).*

Far from advancing a thesis about what constitutively determines propositional content vis-à-vis semantic values in context, Lewis instead appears to defend what we might call the *definability thesis*:

(DT) The propositional content assigned to an expression α in context c is definable in terms of the semantic value assigned to α in c .⁵⁸

Lewis's insightful discussion of DT makes clear that his particular account is just one of the options available with respect to how to understand semantic values, propositional content and how to define the latter in terms of the former. Despite its openness, my account of the relation between semantic value and propositional content is consistent with DT by leveraging some of the other available options.

First, I adopt constant but complicated rather than variable but simple semantic values (see chapter 1, s. 1.2.3). Unlike Lewis's (1980) account, however, according to which constant but complicated values are functions from context-index pairs to truth

⁵⁸ More recently, Rabern seems to have acknowledged that Lewis's arguments had less to do with determination in a metaphysical sense and more to do with retaining the ability to define propositional content in terms of semantic values in light of the distinction he motivated between the two notions. Rabern (forthcoming) defends the coherence and importance of propositional content being "extractable" from semantic values in context against a critique from Stojnic (forthcoming), and traces the line of thought back to Dummett (1959).

values, I eschew the context parameter by simply relativizing the semantic value to an index construed, following Montague (1968), Lewis (1970) and Scott (1970), as an ordered set of coordinates, or points of reference, representing the factors on which the extensions of expressions may depend, including *time*, *location*, *possible world*, etc.⁵⁹ Additionally, these coordinates are sensitive to, e.g., modal and temporal operators, as there may be, that have the effect of shifting the value of a parameter at which an expression is to be evaluated.

In order to treat indexical expressions, including pronouns, I also include an *assignment function* parameter in the index, following a strategy outlined in Santorio (2012).⁶⁰ According to this approach, which is consonant with the proposals of Reinhart (1983) and Heim and Kratzer (1998), indexicals in general are modeled as free variables, which are provided with values by an assignment function. Each particular indexical, however, includes constraints, in the form of phi-features, on which values it can be

⁵⁹ Interestingly, Burge contrasts his account, according to which “ordinary sentences containing demonstrative constructions are true or false relative, and only relative, to occasions in which people use tokens of them in acts of reference” (pp. 205-206), with those of Montague (1968) and Scott (1970), who we noted relativize semantic values to points of reference rather than *acts of reference*, as in the present account. Burge complains that

The account given by Montague and Scott does not explicate the peculiar emptiness – the incomplete semantical status – of sentences containing demonstratives when those sentences are not being *used* by a language user to establish points of reference. (Consider the sentence ‘This is green’ apart from any act of reference.) Their account indicates that sentences containing demonstrative constructions are true relative to some points of reference and false relative to others. But there is no explication of the fact that these sentences are like open sentences in being incompletely interpreted when they are not being used (p. 221; original emphasis).

This complaint appears to be misplaced, however, given that the understanding of language afforded by our semantic competence goes well beyond possible usage, extending to all of the indefinitely many expressions that can in principle be generated by the syntactic rules, even if they could never be used on account of performance limitations. A compositional semantic theory therefore should not be explicated in terms of usage. Indeed, theorizing about our linguistic competence in abstract from (potential) usage seems well motivated (see chapter 1). Although I agree that unused sentences are like “open sentences” in being non-propositional, insofar as propositional content is not compositional, it is no surprise that our linguistic competence comes up short of “complete interpretation.” Burge’s only other issue is that “the distinction between ‘*x* is male’ and ‘I am male’ – between a sentence containing an ordinary free variable ranging over speakers and a sentence containing the demonstrative ‘I’ – is nowhere explicated by the Montague-Scott theory” (p. 222). Assuming by “speakers” Burge means language users more generally, then the present account does explain the difference in terms of the phi-features of ‘I’ vs. those of ‘*x*’. Note that, whatever ‘*x*’ is supposed to represent in Burge’s example, it cannot be a first person pronoun on account of the (lack of) case features of the verb ‘is’ as compared with ‘am’.

⁶⁰ In fact, as alluded to in section 2.4.2, semantic values are plausibly already relativized to an *assignment function* in order to treat quantifiers. See Heim and Kratzer (1998) chapter 6.

assigned.⁶¹ For example, ‘I’, as we noted, is first person, singular, and gender neutral. Accordingly, ‘I’ can only be assigned a value that is understood to be an individual and the speaker of the expression, regardless of the latter’s gender. Likewise, ‘she’ is constrained to be assigned a value that is construed as a female individual (rather than a group or plurality) that is distinct from the speaker, on account of being a feminine, third person, singular pronoun. Semantic values, then, will be constant, and context-invariant, functions from indices to truth-values. Since indices contain assignment functions, semantic values will vary with assignment function, and hence be non-propositional, akin to open sentences in predicate logic.

Lewis (1980), we noted, makes use of the following relation to define propositional content: sentence s is true at context c at index i . Lewis chose to define the propositional content as what he calls *horizontal content*, which results from saturating all but the *possible world* coordinate of the index with the values of the corresponding contextual parameters and yields a classical proposition modeled as a function from possible worlds to truth-values.⁶²

LEWIS’S HORIZONTAL CONTENT (HC_L) of ϕ at context c : $\lambda w. \llbracket \phi \rrbracket^{c, \langle w, t_c, l_c, a_c \rangle}$

Such a proposition is true if the content it expresses at the possible world of the context, c_w , is true at the (possibly distinct) possible world of the index, i_w .

Lewis also notes that other definitions of propositional content, like Stalnaker’s *diagonal content*, are available as well. The diagonal content is also modeled as a function from possible worlds to truth-values, but results (roughly speaking) from abstracting over the *possible world* parameter of the context as well as the index.

STALNAKER’S DIAGONAL CONTENT (DC_S) of ϕ at context c : $\lambda w. \llbracket \phi \rrbracket^{c_w, \langle w, t_{c_w}, l_{c_w}, a_{c_w} \rangle}$

Since each context is world-bound, the diagonal content is effectively that proposition that is true at a given possible world w if the content expressed at w is true, and false at a given possible world w if the content expressed at w is false.

Unlike Lewis, I have suggested the following fundamental relation be provided by our compositional semantic theory: sentence s is true at index i . Furthermore, I propose defining propositional content as the diagonal, rather than horizontal, content (for reasons I explain in more detail in chapter 4). Given that indexicals are given values only relative to assignment functions, the diagonal content of a sentence like (7,

⁶¹ See Heim (2008) for discussion.

⁶² HC_L can be read as: that function from possible worlds w to the extension of ϕ at (or relative to) context c and index i (expanded to reveal the coordinates pertinent to the discussion: a possible world w , the time of c , the location of c , and the agent of c).

repeated here) will be that proposition that is true at a possible world w if the value assigned to ‘he’ by the assignment function is the smartest person in the room at w and false if the value assigned to ‘he’ by the assignment function is not the smartest person in the room at w .⁶³

(7) He is the smartest person in the room

CAMERON’S DIAGONAL CONTENT (DC_C) of (7): $\lambda\langle w, g \rangle. \llbracket (7) \rrbracket^{<w,g>} = 1$
 iff $[\exists x \ \& \ \llbracket \text{‘he’} \rrbracket^g = x \ \& \ x \text{ is the smartest person in the room}]^w$.

More generally, the diagonal content, on my account, will be a function from pairs of assignment functions and possible worlds to truth-values, and thus truth varies over assignment function.

CAMERON’S DIAGONAL CONTENT (DC_C) of ϕ : $\lambda\langle w, g \rangle. \llbracket \phi \rrbracket^{<w,g>}$ ⁶⁴

The assignment function-neutrality reflects the constrained, but open, relation between semantic value and propositional content. In order to arrive at a particular diagonal content, the value of the assignment function coordinate needs to be fixed. Unlike Lewis, however, who let the coordinates of the index be initialized by the corresponding values of the parameters of the context, my account eschews context from the compositional semantics. Instead, I have suggested that the intentions of the speaker constitutively determine the propositional content that is to be associated with any particular utterance of a linguistic expression E . On my account, then, the intentions of the speaker constitutively determine the assignment function on any given occasion.

Discussing the assignment function in relation to indexicals, I deliberately spoke of a value (i.e. an object) being *understood to be the speaker* or *construed as a female*. This kind of talk reflects the fact that language *use* is always mediated by a host of non-linguistic factors the most important of which is the surrounding situation in which it is used *as the language users take it to be*. For a variety of reasons, natural language users can be, and are not infrequently, mistaken about a number of things, including *who*, *where*, *when*, and *how* they are – to say nothing of *what* and *why* they are! And yet their ability to use language to express thoughts and communicate with others persists despite this (occasional) ignorance because their semantic competence,

⁶³ I suppress the other points of reference from the index for the sake of simplicity. Also, we’ll see in Chapter 5 that certain data require the inclusion of additional *time* and *possible world* parameters, i.e., double-indexing.

⁶⁴ This is similar to the “open content” proposed by Cumming (2005) in the case of names in order to address Frege’s Problem. See Rabern and Ball (forthcoming) for discussion.

which allows for the possibility of such expression and communication, is not sensitive to these kinds of facts. Language users' understanding of the system of symbols that constitutes their language, in other words, is context-invariant (hence the choice of constant semantic values). In contrast, the *use* of language is always mediated by the user's propositional attitudes towards the situation of use, including their attitudes regarding their interlocutor(s)'s propositional attitudes towards the situation of use.

Stalnaker has developed a sophisticated formal framework for modeling these features in terms of speaker presupposition.⁶⁵ In particular, Stalnaker defines diagonal content in terms of the *context set*, a theoretical notion consisting of the set of possible worlds consistent with what is presupposed by the interlocutors in a given communicative interaction. Hence, which possible worlds are in the domain of STALNAKER'S DIAGONAL CONTENT (DC_S) is a matter of which possible worlds are in the context set. Similarly, the domain of CAMERON'S DIAGONAL CONTENT (DC_C) includes only those worlds that are elements of the context set. As a result, each assignment function g (which provides values for variables) is restricted to the set of worlds that are elements of the context set, and thus provides as values to variables only entities drawn from the domains of each possible world in the context set. In this way, the constraints on the available assignment functions imposed by the context set reflect the constraints on speaker intentions imposed by their propositional attitudes toward the situation they find themselves in. Hence, the assignment function will be constrained to assign a value to, e.g., 'I' that is presupposed to be the speaker (which could vary between distinct worlds in the context set if the participants are, for whatever reason, misled or ignorant about the identity of the speaker).⁶⁶ Similarly, the other values of the index coordinates (*time*, *location*, etc.) will be initialized by the presupposed features of the context set (time, location, etc.).

So far as semantic incompleteness is concerned, it should be clear that it poses no threat as such to a compositional semantic theory that need not yield propositions as output. Nevertheless, there remains the question of how the semantic values of semantically incomplete expressions come to be associated with particular propositional contents on given occasions of language use. Here, again, I suggest that what makes it the case that the propositional content of an expression like (17, repeated here) is,

⁶⁵ See Stalnaker (1970; 1974; and 1978) for early formulations of the framework, and Stalnaker (1998; 2004; and 2014) for more recent refinements and discussion. I discuss Stalnaker's framework in more detail in chapter 4.

⁶⁶ Indexicals, in other words, have the effect of introducing *individual concepts* into the propositional content, functions from possible worlds to individuals, roughly in the manner of Carnap (1947).

e.g., (19) rather than (20) (or vice versa) on a given occasion of use is the speaker's intention in uttering (17).

(17) Mike has finished

(19) Mike has finished *working on the motorcycle*

(20) Mike has finished *reciting the alphabet*

Much like with phi-features, the semantic properties of (17) constrain, without determining, what it can be used to say. Consider, for example a situation in which Mike has been instructed to remove the piston from a particular engine in his small engine mechanics class. The instructor sends another student, Maurice, over to check on Mike's progress. Reporting back, Maurice might utter (17) to the instructor, in which case the completion could be something like in (17*).

(17*) Mike has finished *removing the piston from the engine*

Issues about incomplete descriptions ('the piston', 'the engine') aside, we can understand Maurice's utterance to be true just in case Mike finished removing the piston from the engine, as instructed. In this case it seems clear enough how a semantically incomplete sentence such as (17) could be used and how the hearer could infer, on the basis of available contextual information, a (complete) propositional content.

Clearly (17) could be expanded in several ways in our situation all of which would achieve the intended effect on the part of Maurice of conveying to the instructor that Mike had finished the task in question (e.g. Mike has finished *working on the engine; extracting the piston; what you* (i.e. the instructor) *asked him to do*; etc.). What is less clear is why any particular completion should be privileged over any other, or why we might need to pin down a single completion of Maurice's utterance of (17). Of course, the propositional content of Maurice's (sincere) utterance of (17) certainly could not have been *that Mike has not yet finished his task* or *that Mike needs help to finish his task*, etc. Nevertheless, it is reasonably clear what the range of options could be for the propositional content of Maurice's utterance since the semantic value of (17) obviously constrains what it can be used to say.

One option for implementing this idea formally is to adopt the idea, following Davidson (1967), that verbs include an event variable in their logical form. (17) would amount to something like the following.⁶⁷

⁶⁷ Note that 'agent' here concerns the thematic relation of the sentence, rather than the speaker of the context, as in Kaplan (1989a). Intuitively, Mike performed the "finishing" action and so was the

(17_E) $\lambda e.[\text{finishing}(e) \ \& \ \text{past}(e) \ \& \ \text{agent}(\text{Mike}, e)]$

That is, (17) encodes the property of being an event such that the event was a finishing, the event occurred in the past and Mike was the agent of the event. The conjuncts that serve as predicates of the event variable e can be thought of as placing a constraint on which events can be assigned to e . No such event can be one that was not a finishing, or that has yet to occur, or that has an agent distinct from Mike. And as with the case of indexicals, on any given occasion of use, the assignment function which provides the value of e is constitutively determined by the intentions of the speaker.⁶⁸

2.7 Conclusion

Many theorists have provided arguments that the notions of content – understood as the object of assertion, the attitudes, etc. – and semantic value – understood as the compositional meaning of a linguistic expression – need to be distinguished. This raises the question of how to understand the relation between the two notions on the basis of the plausible assumption that what we say when using language bears a close relationship to the meanings of the words used. As Rabern (2012) notes,

Something would clearly have gone wrong if our theory of what our sentences *mean* didn't fit naturally with our theory of the things we *say* by the act of uttering those sentences p. 76; original emphasis).

I have argued that the relation is not properly understood, as some maintain, in terms of metaphysical determination relative to a context, since context cannot plausibly bear such a theoretical burden, as brought to light by considering the properties of pronouns and cases of semantic incompleteness. The determination principle, in other words, does not capture the “natural fit” between the meanings of expressions and our use of those expressions.

I also sketched an alternative account according to which semantic value is defined relative to an index, in the manner of Montague (1968), Lewis (1970), and Scott (1970), rather than by appeal to context, as in Kaplan (1989a) and Lewis (1980), and propositional content is construed as diagonal content and defined along the lines articulated in Stalnaker (1978). Additionally, on the alternative account, the

agent, rather than the patient, as in ‘Mike was struck by the puck.’ See Parsons (1990) and Schein (2002) for discussion of so-called thematic separation, according to which the thematic roles are represented separately from the main description of the event (i.e., as opposed to $\lambda e(\text{finishingby}(e, \text{Mike}) \ \& \ \text{past}(e))$)

⁶⁸ This is similar to Predelli’s (2005) proposal, which I discuss in chapter 3.

relation between semantic value and propositional content is constitutively determined by the intentions of the speaker on any particular occasion of speech. This position seems to be a more natural fit and to follow the insights of Grice (1975), Stalnaker (1978) and others, by adopting the working hypothesis that as little context sensitivity as possible is encoded linguistically, basically only that which cannot be accounted for pragmatically in terms of general considerations about the rational, cooperative enterprise of inter-personal communication. Admittedly, it pushes this hypothesis to the extreme by invoking context-invariant semantic values. Yet semantic values so assigned, I contend, more faithfully delimit the contribution that our linguistic competence makes to various language involving phenomena, including interpersonal communication and the evaluation of (potential) language use as (in)appropriate, (un)acceptable and (un)truthful.

Chapter 3

Speaker Intentions in the Context of Semantics

3.1 Introduction

As is well known, a variety of natural language expressions appear to exhibit context-sensitivity. What exactly such expressions are sensitive to and how the sensitivity occurs is an unsettled matter, but the majority of contemporary formal semantic theories make some sort of appeal to context. So how should we understand the notion of context invoked in such theories? The question is important for at least two reasons. First, the appeal to context has steadily increased since context-sensitivity was identified as a “fly in the ointment” of a formal theory of natural language meaning.¹ Theorists have modeled the semantics of a variety of expressions including indexicals, demonstratives, genitives, relational terms, modals, quantifiers and gradable adjectives by appeal to context. Such appeal has outpaced the development of the theoretical notion of context, however, leaving it largely implicit how we should understand context and why. More importantly, then, and secondly, in the absence of an explicit account of the theoretical significance of the notion, it is unclear what an appeal to context amounts to.

A full investigation of context-sensitivity merits much more space than can be given here. Instead, focus will be limited to demonstratives, widely agreed to be paradigms of context-sensitive expressions, and recent proposals by King (2014) and Stokke (2010) to include speaker intentions in the context of a Kaplan-style, character-based semantics. These proposals are importantly different from other accounts that appeal to intentions

¹ Davidson (1967b), p. 33.

(e.g., Bach (1992), Predelli (2005), Åkerman (2009) and Montminy (2010)) and raise foundational questions about the role of context in semantic theorizing and the status of the features it represents: What should be included in the context? Do intentional states belong in the context, and if so why? What kinds of extra-linguistic features do elements of the context represent and what is their representational role?

While much of the debate regarding the semantic import of speaker intentions has focused on competing judgments about putative cases of demonstrative reference (failure), the current discussion is concerned with more general theoretical issues concerning formal treatments of context-sensitivity. Clearing up confusion about the status of speaker intentions and context, I believe, requires critical reflection on the role of context within a broader theoretical framework regarding language and its use. It is important to get clear on the theoretical framework under discussion, its aims and criteria, in order to illuminate and properly understand the role of context. As will emerge, however, theoretical frameworks are not always shared amongst theorists, and different conceptions of the task of semantic theory lead to different claims about speaker intentions and context.

I will argue that speaker intentions should not be included in the context of a Kaplanian character-based semantics because including them misconstrues the representational role of context in such a theory, which aims to explicitly characterize semantic, rather than pragmatic or communicative, properties of expressions. Furthermore, I argue that King and Stokke's proposed constraint that speaker intentions be made recognizable to the audience/hearer is redundant in light of more general rational requirements on language use that apply to all expressions, not just demonstratives.

I begin by rehearsing the details of Kaplan's character-based semantic framework before describing the treatment of demonstratives found in King (2014) and Stokke (2010), which incorporates speaker intentions into the context. I then discuss different ways theorists have proposed accommodating demonstratives within the character-based framework and consider a parallel debate between Salmon (2002) and Caplan (2003) regarding the inclusion of demonstrations in the context. The latter debate demonstrates the need to distinguish between different notions of context at work in the literature, which in turn will allow me to assess and raise some problems for King and Stokke's proposals.

3.2 Character-based Semantics

3.2.1 Kaplan's Formal Framework

Kaplan (1989a) introduced a formal semantic theory for modeling context-sensitivity that aimed to provide an answer to the question of, for example, “what is said when a speaker points at someone and says, “He is suspicious” ” (p. 489). Due to the pronoun, the latter sentence can be used to express different propositions on different occasions. When used to talk about Stephen Harper, the individual picked out by ‘He’ is plausibly Stephen Harper, and when used to talk about Barack Obama, it is plausibly Barack Obama. Kaplan’s theory targets a range of expressions he calls indexicals, which can be used to pick out distinct individuals, times and locations depending on when, where, and by whom they are used.² Nevertheless, even though different speakers can say different things when uttering ‘He is suspicious’, the same sentence-type is being used in each case. And insofar as they share a common, unambiguous linguistic form, distinct utterances of expressions containing indexicals would seem to share certain semantic properties.

Kaplan analyzes indexicals in terms of a fundamental distinction between two levels of meaning. The semantic aspect of an indexical that is common to all its uses is captured at the level of *character*, which is “set by linguistic conventions and, in turn, determines the content of the expression in every context” (p. 504). More specifically, the character of an indexical “provides a rule which determines the referent in terms of certain aspects of the context” (p. 490). In contrast, the level of *content* varies with context and corresponds to the distinct individuals, times and locations picked out by distinct occurrences of indexicals. The upshot of the distinction was to isolate the invariant features of indexicals in their characters, defining them as rules that yield distinct, determinate contents by appeal to certain variable aspects of context.

Kaplan further distinguished between two kinds of indexicals. *Pure indexicals* have their contents fixed simply in terms of features of the context, such as the time, location, etc. For example, ‘now’ picks out the time of the context as its content, and

² Kaplan (1989a) writes,

The group of words for which I propose a semantical theory includes the pronouns ‘I’, ‘my’, ‘you’, ‘he’, ‘his’, ‘she’, ‘it’, the demonstrative pronouns ‘that’, ‘this’, the adverbs ‘here’, ‘now’, ‘tomorrow’, ‘yesterday’, the adjectives ‘actual’, ‘present’, and others (p. 489)

The proper range of context-sensitive, or indexical, expressions is the subject of much debate. See Cappelen and Lepore (2005) and the references therein for a recent discussion.

other examples include ‘I’, ‘here’, and ‘today’. According to Kaplan, “[t]he linguistic rules which govern *their* [i.e., *pure indexicals*] use fully determine the referent for each context” (1989a, p. 491; original emphasis). Formally, we “represent characters by functions from possible contexts to contents” (p. 505). Possible contexts, the arguments of character functions, are represented by an ordered n-tuple of parameters including *agent*, *time*, *place/location*, and *possible world* such that the agent is located at the time at the place/location in the possible world (p. 509; 543-44). Each parameter represents one of the “aspects of context” in terms of which character functions are defined. For example, the character of ‘I’ takes a possible context *c* as argument and yields the value corresponding to the *agent* parameter of *c*, which is the content of ‘I’ relative to *c*. Somewhat less formally, ‘I’ refers to “the agent of the context” and similarly for the other pure indexicals (p. 505).³

The contents of *true demonstratives*, on the other hand, do not seem to vary strictly in virtue of the typical features of context. Examples include ‘we’, ‘she’, ‘that’, ‘these’, etc. To illustrate, consider the following sentences (*and contextual information*).

- (1) That is Hannah’s bag (*At a busy baggage carousel*)
- (2) She is a yoga teacher (*Amidst several females*)
- (3) Jeff is playing guitar in a band now (*Discussing Jeff at 9:45pm, September 7, 2010*)⁴
- (4) John thinks he is the smartest person in the room (*John is not the only male in the room*)

In (1), ‘that’ could be used to refer to any of the bags on (or around) the carousel, and in (2), ‘she’ could be used to refer to any of the females in the vicinity. A felicitous use of (3) allows that Jeff not be playing guitar in a band at 9:45pm, September 7, 2010. And in (4), ‘he’ can be used to refer to John or another male.⁵ In each case, the content of the expression does not seem to be fixed simply by appeal to the context

³ Throughout this essay I use ‘content’ and ‘referent’ interchangeably, ignoring the distinction between intension (content) and extension (referent) in Kaplan’s framework. Insofar as Kaplan regards them as directly referential, the distinction is negligible in the case of indexicals.

⁴ Stokke does not appear to distinguish between *pure indexicals* and *true demonstratives* and includes (*inter alia*) ‘here’ and ‘now’ amongst the class of *intention-sensitive* expressions, whereas King restricts his account to Kaplan’s true demonstratives, viz., “expressions that need to be supplemented in some way in order that they secure values in contexts” unlike *pure indexicals*, “whose conventional meanings by themselves suffice to secure values in all contexts” (2014, p. 219).

⁵ I ignore the bound reading, which may be attested by the sloppy readings of continuations of, e.g., ‘John thinks he is the smartest person in the room and Tim does too.’ See chapter 2 (s. 2.4.2) and Heim and Kratzer (1998) ch. 9 for discussion.

of use (such as, e.g., the (fe)male of the context) since multiple candidate contents are equally compatible with the semantic properties of the expression. According to Kaplan, “[t]he linguistic rules which govern the use of the true demonstratives [...] are not sufficient to determine their referent in all contexts of use. Something else [...] must be provided” (1989a, p. 490).

Kaplan initially claimed that a demonstrative has its content fixed, relative to a context, by an accompanying demonstration – “typically, though not invariably, a (visual) presentation of a local object discriminated by a pointing” (1989a, p. 490) – before suggesting that it is actually fixed by the speaker’s intention, and that an accompanying demonstration, if one occurs, simply externalizes the intention (1989b, p. 582).⁶ However, Kaplan never explained how his suggestion was to be formally implemented in his theory and, as a result, the question of how a character-based semantics should be developed to accommodate demonstratives remains the subject of debate. In what follows, I focus on the proposals of King (2014) and Stokke (2010), who develop Kaplan’s later suggestion that speaker intentions fix the contents of demonstratives and defend including them in the context.

3.2.2 King (2014) and Stokke (2010)

King (2014) claims “speaker intentions *can* be part of the context that determines semantic values and what is said” (p. 231; original emphasis). On King’s *Coordination Account*,

the value of a use of a demonstrative in a context is that object *o* that meets the following two conditions: 1) the speaker intends *o* to be the value; and 2) a competent, attentive, reasonable hearer would take *o* to be the object that the speaker intends to be the value (p. 225).

According to the *Coordination Account*, “a speaker’s referential intentions are part of the semantically relevant context” (p. 233) and “an object *o* is the value of an

⁶ Kaplan notes the possibility of opportune demonstrations as exceptions, e.g., if a sheep walked into the room and captured everyone’s attention, no demonstration would be required to fix the referent of the pronoun in ‘Where did she come from?’ Some theorists have defended the role of demonstrations in fixing the contents of demonstratives (McGinn (1981), Reimer (1991)), while others maintain they’re fixed by certain causal relations (Devitt (1981)) or by a variety of features of the situation in which they are used (Wettstein (1984), Gauker (2008)). See Bach (1992) and Åkerman (2009) for discussion. Still others have argued against a uniform account of demonstrative reference fixing (Reimer (1992), and Siegel (2002)). It is also not uncommon for theorists to ignore the question altogether, using ‘demonstration’ as a placeholder for whatever it is that fixes the content of demonstratives (Braun (1996), Caplan (2003)).

occurrence of a demonstrative in context just in case the speaker intends *o* to be the value and the speaker successfully reveals her intention” (p. 225). In light of the second condition, “a speaker can successfully reveal her intention even though her hearer failed to figure out what she intended. The hearer could be inattentive, incompetent, etc.” (p. 225, n. 20). Thus, King includes not only speaker intentions in the context, but also what amounts to a constraint on the admissible intentions, characterized in terms of an idealized hearer who knows the “common ground of the conversation in Stalnaker’s sense” (p. 226).

King’s justification for the *Coordination Account* is, in part, “that it gets the intuitively correct results in a variety of cases” (e.g., Kaplan’s notorious Carnap/Agnew case)⁷ (p. 229). Alternative accounts appealing either to accompanying demonstrations or simply unconstrained speaker intentions falter precisely in “cases in which a speaker has the relevant intention but mounts either a poor demonstration or no demonstration at all” (p. 223). “Intuitively,” King claims, “the speaker failed to discharge her responsibility to be understandable”, suggesting the alternative accounts “err in not requiring the speaker to do enough to secure a value for her demonstrative” (p. 225). The other part of the justification, then, and a theoretical virtue, according to King, is that the semantic values of uses of demonstratives in context are defined (via the second condition) in terms of what is “*required for successful communication* with a demonstrative” (p. 229; original emphasis).

Stokke (2010) similarly defends “construing speaker intentions as parameters of the kind of contexts that provide arguments for characters” (p. 384). On Stokke’s *Intention-Sensitive Semantics* (ISS), “[t]he only intentions we allow into narrow context are successful intentions. An intention is successful only if the audience is in a position to recognize it. What the audience is and is not able to recognize is constrained by wide

⁷ Kaplan (1978) writes:

Suppose that without turning and looking I point to the place on my wall which has long been occupied by a picture of Rudolf Carnap and I say.

(27) Dthat [I point as above] is a picture of one of the greatest philosophers of the twentieth century.

But unbeknownst to me, someone has replaced my picture of Carnap with one of Spiro Agnew. I think it would simply be wrong to argue an “ambiguity” in the demonstration, so great that It can be bent to my intended demonstratum. I have said of a picture of Spiro Agnew that it pictures one of the greatest philosophers of the twentieth century. And my speech and demonstration suggest no other natural interpretation to the linguistically competent public observer (p. 239)

See Reimer (1991) and Bach (1992) for discussion.

context” (p. 402).⁸ Like the coordination account, then, ISS adds a speaker intention parameter to context as well as a constraint on its admissible values characterized in terms of the audience’s ability to recognize the speaker’s intention.

For his part, Stokke is concerned to address what he sees as a dilemma for the character-based theorist:

Either she must take referential intentions as themselves parameters of contexts providing arguments for characters, or she must concede that these expressions do not have their referents determined as a function of context (p. 384).

In light of Kaplan’s distinction between *pure indexicals* and *true demonstratives*, which might be read as a clear articulation of the second horn, it would seem that Stokke’s dilemma is rather contrived. As noted above, however, Stokke does not adopt Kaplan’s *indexical/demonstrative* distinction. In any event, Stokke pursues the first horn of the dilemma in defense of a “semantic approach to context-sensitivity”, and argues that it is superior to Predelli’s (2005) account of context-sensitivity according to which speaker intentions are relevant to content, but are not included in the context.

The main difference between the two accounts appears to be that King’s *Coordination Account* is constrained by an idealized, “competent, attentive, reasonable hearer who knows the common ground”, while Stokke’s ISS is constrained by the ability of the actual audience to recognize the speaker’s intention on the basis of the wide context. However, ISS merely requires a hearer to be “in a position to recognize” the speaker’s intention, and thus the difference is likely superficial. Both proposals take speaker intentions (constrained to be recognizable to the hearer/audience) to be the “something else” relevant to demonstratives, and claim they fit properly in the theory as an additional contextual parameter.⁹

3.2.3 Accommodating Demonstratives

Generally speaking, there are three different ways theorists have considered accommodating demonstratives within a character-based semantic framework. According to

⁸ Stokke defines ‘narrow context’ as “those aspects of context that determine reference” and ‘wide context’ as “those aspects that the audience uses in reasoning about the speaker’s intentions” (p. 385). We return to both notions below.

⁹ Before both King and Stokke, Bianchi (2003) proposed an account according to which the speaker’s intention must be “communicated or made available” to the actual (as opposed to an idealized) addressee (p. 61-62). However, the exact status of speaker intentions vis-à-vis the context is unclear on her account.

Kaplan's early theory, demonstratives "must be associated with a demonstration in order to determine a referent" (1989a, p. 524). Whereas pure indexicals are incomplete in the absence of a context, true demonstratives in the absence of a demonstration are incomplete even when paired with a context. On the first method, which we'll call (following Caplan (2003)) *Kaplan's Theory*, a demonstrative paired with a demonstration is what is assigned a character and thereby fixes the content of the demonstrative, relative to a context.¹⁰

Kaplan also considers another method, which he calls the *Indexical Theory of Demonstratives*, according to which the context is expanded to include a sequence of demonstrata, the objects picked out by demonstrations. Here's what Kaplan says,

Thus just as we can speak of agent, time, place, and possible world history as features of a context, we may also speak of first demonstratum, second demonstratum, (some of which may be null) as features of a context. We then attach subscripts to our demonstratives and regard the n-th demonstrative, when set in a context, as rigid designator of the n-th demonstratum of the context. Such a rule associates a character with each demonstrative (1989a, p. 528).

On this second method, which we'll call (again following Caplan) the *Bare Bones Theory*, demonstratives are still incomplete in the absence of a context but unlike on *Kaplan's Theory*, they are assigned characters, i.e., rules that determine a referent in every context. According to *Kaplan's Theory*, only demonstrative-demonstration pairs have characters, but according to the *Bare Bones Theory*, a demonstrative paired with a context determines a content just like with pure indexicals, while demonstrations are absent altogether.¹¹

A third method, not considered by Kaplan (1989a), expands the context to include demonstrations rather than demonstrata, and is defended in Salmon (2002):

¹⁰ On *Kaplan's Theory*, the "something else" required is really something else, neither an expression nor a context (which remains a quadruple of parameters). In particular, Kaplan adopts what he calls the *Fregean Theory of Demonstrations* according to which we "regard each demonstration as presenting its demonstratum in a particular manner, which we may regard as the sense of the demonstration" (p. 514). By providing a sense, and thereby making it "appropriate to ask of a given demonstration [...] what would it have demonstrated under various counterfactual circumstances" (p. 515), Kaplan sees a satisfying solution to Frege's problem of how, for example, 'That is that' (demonstrating Hesperus and Phosphorus, respectively) can be informative.

¹¹ "In providing no role for demonstrations as separable 'manners of presentation'," Kaplan notes, "this theory eliminates the interesting distinction between demonstratives and other indexicals" (p. 528), adding that, "the Fregean idea that that very demonstration might have picked out a different demonstratum seems to me to capture more of the epistemological situation than the Indexicalist's idea that in some contexts the first and second demonstrata differ" (p. 529).

My proposal is that a context of use be regarded as sometimes including a demonstration among its features, along with an agent, a time, a place, and a possible world. Not the bare demonstratum, but the demonstration with all its representational content. [...] since the same demonstrative may recur within a single sentence or stretch of discourse, each time accompanied by a different demonstration ('That one goes between that one and that one'), the context should include an *assignment* of a demonstration for each syntactic occurrence of a demonstrative in a sentence – the first occurrence, the second, and so on (p. 518; original emphasis).

Following Salmon and Caplan, we'll call the third method the *Indexical Theory*. As Salmon notes, on the *Indexical Theory*, "the distinction between so-called pure indexicals and demonstratives is a matter of incompleteness not in the expressions, but in their contexts. Demonstratives and "pure" indexicals alike are full-fledged indexicals, complete expressions unto themselves." (p. 519). Thus, like the *Bare Bones Theory*, characters are assigned to demonstratives, rather than to demonstrative-demonstration pairs as on *Kaplan's Theory*.

It will be instructive to consider Salmon's (2002) reasons for preferring the *Indexical Theory* to the *Bare Bones Theory*, as well as Caplan's (2003) rebuttal in favour of the latter, since the dialectic bears on the present discussion. Kaplan's (1989b) suggestion that speaker intentions rather than demonstrations fix the content of demonstratives is accompanied by remarks that seem to align with the *Bare Bones Theory* by incorporating demonstrata into the context. King and Stokke, however, propose to develop Kaplan's later suggestion along the lines *Indexical Theory* by incorporating speaker intentions into the context. Moreover, Stokke defends his account against that of Predelli (2005), who accepts the role of speaker intentions in determining the reference of demonstratives, but opts for the *Bare Bones Theory*.

3.2.4 Salmon (2002) and Caplan (2003)

Salmon advances two arguments for preferring his *Indexical Theory* to the *Bare Bones Theory*. I'll focus on the first of the two arguments, which, as Caplan (2003) explains, turns on how we understand context, and so is particularly relevant to the current discussion. Salmon's second argument has to do with the appropriate way to address Frege's puzzle as it concerns demonstratives, which, although interesting in its own right, goes beyond the scope of this chapter. Moreover, Frege's puzzle does not figure

in either King or Stokke's accounts for including speaker intentions in the context, so I leave spelling out the import of their proposals for Frege's puzzle to another day.

Salmon's argument has to do with cases of deferred reference, where an object not present in the immediate environment is referred to by means of some proxy that is present, such as a photograph. On Salmon's adaptation of Kaplan's famous example, Salmon points at a picture of Alonzo Church and utters (5).

(5) He was one of the greatest thinkers of the twentieth century

Church, who is meant to be the demonstratum of the pronoun in (5), is nowhere to be found in the environs of Salmon's utterance, unlike Salmon's demonstration of the photograph. Salmon writes,

The demonstratum is entirely absent from, and inactive in, the context; the demonstrative 'he' succeeds all the same. In general, the demonstratum of a particular demonstration need not be present by proxy nor *connected* to the context in any significant ("real") manner, for example, causally (p. 517; original emphasis).

On the *Bare Bones Theory*, recall, contexts are expanded to include demonstrata rather than demonstrations. Salmon's complaint is that the relevant demonstratum in (5), namely Church himself, is not plausibly part of the context in which (5) is uttered, unlike the demonstration, and so the *Indexical Theory* fits better with cases of deferred reference.

Caplan (2003) rightly observes that in objecting to the *Bare Bones Theory* on the basis of talk of demonstrata being (e.g., causally) "connected" to the context, "Salmon seems to be appealing to something like a pretheoretic notion of context according to which contexts are natural things out there in the world" (p. 196). Indeed, Salmon is explicit in this regard:

I am thinking here of a context as the setting or environment in which an utterance occurs, rather than as the proposition, or set of propositions, assumed by all conversational participants (p. 517, n. 37).¹²

But as Caplan notes,

¹² Furthermore, Salmon's discussion indicates that he is thinking of the context and its elements as observable to the participants. Salmon writes,

Demonstrations have important features in common with such contextual aspects as time and place: they are all recognizable as features of the circumstances surrounding an utterance that fix the contents of uttered indexicals (p. 518, n. 41). [...]

There's another notion of context, on which contexts needn't be natural things out there in the world. On this other notion, a context is whatever provides what we need for the semantics of indexicals. [...] for example, an agent for 'I', an addressee for 'you', a time for 'now', and a place for 'here' (p. 197).

This later notion of context is the kind deployed in Kaplan's formal framework, and Caplan goes on to defend its theoretical utility in formal semantics. The upshot is that, insofar as Kaplan's notion of context is simply a formal structure used to represent whatever is required for the semantics of indexicals, there is no issue about including Church as a demonstratum in the context. Salmon's objection to the *Bare Bones Theory* only goes through if one construes context as a natural thing out there in the world, but there's no need to do so, and ample reason not to, as we'll see below.

3.2.5 Distinct Notions of Context

The debate between Salmon and Caplan highlights the fact that claims about how to develop the character-based framework to accommodate demonstratives, and in particular, proposals to "expand" the context, depend on how we construe context and the role it plays in the theory under consideration. It is therefore important to untangle at least three distinct notions of context in the literature so as to isolate the target notion of King and Stokke's proposals.

Initially, we can think of context, as Salmon does, as a "setting or environment in which an utterance occurs." For example, David Lewis writes,

Whenever a sentence is said, it is said at some particular time, place and world. The production of a token is located, both in physical space-time and in logical space. I call such a location a *context* (1980, p 85; original emphasis).

Call this the *speech context* since it represents only those situations in which speech (potentially) occurs. Conceived of as a concrete situation, the *speech context* does not yet do much theoretical work since it is rich in information, but as yet unanalyzed.

the speakee must observe the demonstrations to grasp the speech act adequately, since knowing which proposition was asserted – knowing what is said – requires knowing which object was demonstrated. [...] the speakee now takes the proposition in terms of its relation to the particular demonstrations observably included in the context. [...] the context that includes the observable demonstration δ (pp. 519-520).

This, of course, won't work in the case of speaker intentions, which are not as such observable.

A location in logico-space-time *per se* does not come labeled with respect to the features that are theoretically relevant to semantics, such as *speaker*, *time*, *location*, *addressee*, etc. Nevertheless, each such location “has countless features, determined by the character of the location” (p. 79), and as such, the speech context can be thought of as playing a constitutive role with respect to language use. Various facts including what is being presupposed, what is said, who (if anyone) is being spoken to, what (if anything) the speaker intends, and whether the addressee (if there is one) can recognize the speaker’s intention are presumably fixed by the facts captured by the *speech context*.

As noted above, Kaplan (1989a) invokes a theoretical notion of context specifically relevant to semantics, represented as an n-tuple of parameters, including *agent*, *time*, *position*, and *possible world*, in terms of which the characters of context-sensitive expressions are defined. Call this the *formal context*, an abstract, formal representation of those kinds of features of context that are systematically associated with certain context-sensitive expressions, as triggered by the semantics of those expressions. A formal context is standardly appealed to in order to assign contents to a range of apparently context-sensitive expressions including pronouns (e.g., ‘I’, ‘she’), adverbs (e.g., ‘now’, ‘there’, ‘actually’) and adjectives (e.g., ‘actual’, ‘present’).¹³

Kaplan qualifies his technical notion of context on more than one occasion so as to differentiate it from the *speech context*. In particular, Kaplan is careful to

contrast an *occurrence* of a well-formed expression (my technical term for the combination of an expression and a context) with an *utterance* of an expression. [...]

it is important to distinguish an *utterance* from a *sentence-in-context*. The former notion is from the theory of speech acts, the latter from semantics. Utterances take time and utterances of distinct sentences cannot be simultaneous (i.e., in the same context). But to develop a logic of demonstratives it seems most natural to be able to evaluate several premises and a conclusion all in the same context (1989a, p. 522; original emphasis).¹⁴

¹³ See, *inter alia*, Richard (1982), Salmon (1986), Braun (1995; 1996), Perry (2001), Caplan (2003), Predelli (2005), Gauker (2008).

¹⁴ As Kaplan’s remarks suggest, the formal context is invoked primarily in the service of exploring the logical relations of sentences containing context-sensitive expressions. Similar remarks are found elsewhere: “Utterances take time, and are produced one at a time; this will not do for the analysis of validity” (1989b, p. 584). Indeed, logical concerns led Kaplan to restrict the formal context to include only those “proper” parameters *agent*, *location*, *time*, and *possible world* such that in world *w*, agent *a* is located at location *l* at time *t* (1989a, p. 509).

Whereas Lewis's *speech context* appeals to the production of a sentence, Kaplan appeals to *occurrences* of expressions in a technical sense in which "an occurrence requires no utterance" (1989b, p. 584).¹⁵ Thus, while Kaplan's *formal context* cannot play a constitutive role with respect to language use, it can play a role with respect to the content of context-sensitive expressions by representing their extensions. For example, relative to a *formal context* in which Kaplan is the agent, the content of 'I' is Kaplan. Were Lewis the agent of the *formal context*, the content of 'I' relative to that context would be Lewis. A sentence like 'I invented *dthat*' will have different truth-values relative to those different *formal contexts* independently of being uttered (true and false, respectively).

The distinction between an utterance and occurrence is significant, and means that mapping one of the latter to one of the former requires further assumptions. As Caplan (2003) notes, a Kaplanian

semantics tells us about sentences, not utterances, relative to contexts; by itself, semantics doesn't tell us anything about utterances. If we want to use semantics to figure out something about utterances, then we're going to have to find a way to take what semantics tells us about sentences relative to contexts and use that information to figure out something about utterances. Roughly, to say that a sentence-context pair represents an utterance for semantic purposes is to say that we can use what semantics tells us about that sentence relative to that context to figure out something about that utterance (p. 194, n. 10).

As a result, we cannot apply Kaplan's semantics directly to utterance events in the absence of certain assumptions about how the latter are to be represented by the former, an interesting metasemantic question that Kaplan leaves largely unaddressed. What little Kaplan does say is mostly clarification so as to avoid a potential misunderstanding resulting from his informal discussion of his formal framework:

I have sometimes said that the content of a sentence in a context is, roughly, the proposition the sentence would express if uttered in that context. This description is not quite accurate on two counts (1989a, p. 522).

First, as noted above, Kaplan completely brackets the issue of temporal duration in the interests of logical rigor. Instead, he adopts a strategy of "idealization" by, e.g.,

¹⁵ Hence, the *formal context* includes an *agent*, rather than *speaker*, parameter. Kaplan's choice to label his *formal context* the *context of use* was therefore ill-advised and has likely led to considerable confusion.

“referencing all occurrences of “now” to a single instant” (1989b, p. 590). Thus, ‘Now it is 1999 and now it is 2000’ said by an actual speaker as the clock struck midnight at the dawn of the millennium, where the first ‘now’ occurred prior to midnight and the second after, is not captured by Kaplan’s framework, since the parameters of *formal contexts*, such as *time*, do not shift.¹⁶ Second, Kaplan’s notion of truth is relativized to a *formal context*, which, again, “does not require an *utterance* of the expression nor even that the agent of the context have the use of the expression” (1989b, p. 613; original emphasis). This leaves open the question of how Kaplan’s relativized notion of truth is related to our pre-theoretic understanding of truth, and more generally how *formal contexts* are representationally related to *speech contexts*.¹⁷ Various issues surrounding cases involving, for example, answering machines and written notes have been taken to show that the representation relation is anything but straightforward.¹⁸

Another notion of context, motivated by attention to discourse, construes it, not as a concrete situation, nor an abstract formal structure, but as a body of information that interlocutors exploit in order to convey information, generate and infer implicatures, discern one another’s reasons for saying the things they do, etc. Call this epistemic notion of context the *information context*. Stalnaker’s (1978) notion of the common ground between conversational participants is a paradigm example of an *information context*, intended to capture a rich array of information characterized in terms of the doxastic and epistemic states of the individuals in a given communicative interaction.¹⁹ In the above quote, Salmon contrasts his *speech context* construal of context with the *information context* construal developed by Stalnaker, wherein the common ground is modeled in terms of the set of propositions compatible with what the conversational participants are presupposing about the communicative event. King and Stokke also appeal to the *information context* in order to constrain the kind of speaker intentions that are admissible in their theories. Unlike the metaphysical role played by the *speech context*, or the extensional role played by the *formal context*, the *information context* plays an epistemic role by representing the information that is accessible to, and exploited by, the interlocutors during a communicative event – information which,

¹⁶ Several strategies have been explored to refine Kaplan’s framework to capture such cases. See Braun (1996) for one such proposal. See also Pickel et al. (forthcoming) for discussion.

¹⁷ See Cappelen and Hawthorne (2009) and MacFarlane (2014) for discussion of the issues facing a relative notion of truth.

¹⁸ See Predelli (2005), Cohen and Michelson (2013) and the references cited therein for discussion.

¹⁹ The notion of *information context* is also widely appealed to in the literature, developed both in terms of and independently of Stalnaker’s seminal formulation, and is sometimes called the *wide context*. See, *inter alia*, Lewis (1979b), Carlson (1983), Roberts (1997, 2004).

for various reasons (e.g., confusion, amnesia, deception, supposition, etc.) may not accurately reflect the *speech context*.

Much like with indexicals, the word ‘context’ can pick out different things depending on who uses it. When Lewis appeals to context, it tends to mean something different than when Kaplan does so, and when Kaplan appeals to context, it tends to mean something different than when Stalnaker does so. In order to understand the various theoretical claims regarding context and context-sensitivity that have been put forth in the philosophy of language, it is important to be explicit about which notion of context is being appealed to and in which way. The merit of King and Stokke’s proposals to accommodate demonstratives by including speaking intentions in the context likewise depends crucially on which notion of context they have in mind and what role they take it to be playing in their theory.

3.3 Speaker Intentions in Context

Since the *speech context* is a concrete situation, a chunk of logico-space-time, it makes no sense to *add* speaker intentions to it – they are already part of the *speech context*. Moreover, construed as a body of mutually available information, it makes little sense to propose to add speaker intentions to the *information context* since, as Stokke notes, “the speaker’s intentions, just by their very nature, are not directly accessible to her audience” (p. 387). Accordingly, both King and Stokke can be understood as proposing to include speaker intentions in the *formal context*. Indeed, King purports to be developing the insights of Kaplan (1989a; 1989b) and claims that speaker intentions should be included in the “semantically relevant context” (p. 233). Stokke also claims to be developing a character-based theory and explicitly defends including speaker intentions in “the kind of contexts that provide arguments for characters” (p. 384). Moreover, the *formal context* is potentially suitable to speaker intentions since, as Kaplan notes, it “provides what we need for the semantics of indexicals.” In fact, this is just to echo what Kaplan (1989b) says about his notion of context:

Some directly referential expressions, most notably the indexicals, require that the value of a certain parameter be given before a determinate element of content is generated. Context of Use is this parameter. For example, the content of the word “today” is a function of the time of the context of use. If we think of the formal role played by context within the model-theoretic semantics, then we should say that context *provides* whatever parameters are needed. [footnote omitted] From this point of view, context is a package

of whatever parameters are needed to determine the referent, and thus the content, of the directly referential expressions of the language (p. 591; original emphasis).²⁰

Construed as such, the *formal context* could in principle be expanded to include speaker intentions in the case of demonstratives, but only *provided they are needed*. So what is needed for the semantics of demonstratives?

In Kaplan's words, what are needed are the parameters to "determine the referent" of demonstratives. But what sense of 'determine' is at issue here? It is evidently not epistemic determination, in the sense that one ascertains the referent of a demonstrative, since Kaplan's formal framework is not intended to be used to interpret uses of demonstratives, and in any event cannot be so used without further assumptions about how *formal contexts* are mapped on to *speech contexts*. As Stalnaker (1998) notes, remarking on Kaplan's framework, "nothing was explicitly said in the theory about the epistemic status of such a context" (p. 15). Epistemic determination is the province of the *information context*, not the *formal context*. Recall also that Kaplan's framework is meant to allow for contents to be assigned to indexicals, including demonstratives, even in cases in which no utterance occurs. It makes little sense, however, to say that some formal parameter is needed in order to discern the referent of an unused demonstrative.

It is also not evident that metaphysical determination is what is at issue since, as noted above, the *formal context* does not play a constitutive role with respect to language use. The *formal context* itself has nothing to say with respect to the question of what makes it the case that a demonstrative has a particular reference – or almost nothing. Provided certain assumptions are granted, and an occurrence of a demonstrative is taken to represent for semantic purposes some particular utterance of a demonstrative, then the semantics will tell you what the content of the uttered demonstrative *is*, but not *what makes it the case that it is thus and so*. The constitutive story would belong amongst the assumptions that provide for the mapping from occurrences to *speech contexts*. And again, in the absence of it being used, it makes little sense to say that some formal parameter is needed in order to make it the case that a demonstrative refers to a given object.

²⁰ Kaplan is emphatic the *formal context* is what *provides* the parameters needed to treat indexicals, and again explicitly distinguishes it from the *speech context* in the footnote to the above passage:

This, rather than saying that context is the needed parameter, which seems more natural for the pretheoretical notion of a *context of use*, in which each parameter has an interpretation as a natural feature of a certain region of the world (n. 52).

I would suggest, instead, that we understand ‘determine’ in the sense of *assign*, or *specify*, as in the case of definitions. Consider, for example, how Kaplan describes the character rules for indexicals:

The rules tell us for any possible occurrence of the indexical what the referent would be [...] The rules tell us what it is that is referred to. Thus, they *determine* the content (the propositional constituent) for a particular occurrence of an indexical (p. 523; original emphasis).

Moreover, Kaplan likens the model-theoretic role of the *formal context* to that of an assignment function, writing,

The element of content associated with a free occurrence of a variable is generated by an assignment. Thus, for variables, the assignment supplies the parameters that determines [sic] content just as the context supplies the time and place parameters that determine content for the indexicals “now” and “here” (p. 591).

Indeed, Kaplan explicitly equates the determination of content, as he is using the term, with the assignment of a value: “[o]nce such a value is assigned, that is, once a content is determined [...]” (1989b p. 592). Consider an analogy with arithmetic. In the case of ‘ $x + 3 = y$ ’ the value of x is needed to *assign* or *specify* the value of y (and vice versa). That $x = 2$, for example, determines, in this sense, that $y = 5$. Kaplan’s formal framework is, in essence, a system of rules for modeling expressions, and hence, questions about what parameters are needed to determine the content of demonstratives are questions about how the rules of the system should be expanded in order to incorporate demonstratives.

So what parameters are needed to *specify* the referent of demonstratives in all contexts of “use” in the sense relevant to the formal system (i.e., including those in which no utterance occurs)? According to King and Stokke, the relevant features of context are speaker intentions, and hence demonstratives should be accommodated according to the *Indexical Theory*. It’s worth noting, however, that Kaplan seems to have been inclined towards the *Bare Bones Theory*. Thinking back on his original theory, Kaplan (1989b) famously notes a change of heart regarding demonstratives:

On the theory of true demonstratives in *Demonstratives* [(1989a)], a demonstration accompanies every demonstrative and determines its referent. On my current view, the referent of a true demonstrative is determined by the utterer’s intention (p. 585).

Kaplan then discusses the semantic role of directing intentions as follows.

What should we think of as the contextual feature relevant to the evaluation of a demonstrative? In the formal semantics, it may be taken to be the demonstratum. But at the preformal level, I think of it as the *directing intention*. The directing intention is the element that differentiates the ‘meaning’ of one syntactic occurrence of a demonstrative from another, creating the *potential* for distinct referents, and creating the *actuality* of equivocation. [footnote omitted] It also seems critical for the ‘cognitive value’ of a syntactic occurrence of a demonstrative, at least for the speaker. Note however that it is neither character, content, nor referent. In the case of the pure indexicals, “today”, “here”, etc., the relevant contextual feature is always the referent, and there doesn’t seem to be any role, let alone a semantic role, for a comparable entity. Curiouser and curiouser! (pp. 587-588; original emphasis).

Here, Kaplan is clearly advocating for the *Bare Bones Theory* even granting the import of speaker intentions with respect to demonstratives. Given that Kaplan’s *formal context* does not necessarily represent an utterance event, it makes sense to expand it to include demonstrata rather than speaker intentions. For in the absence of an utterance there is presumably no speaker intention either, but Kaplan’s framework is designed to allow contents to be assigned all the same in such cases, and including demonstrata allows for such assignment along the lines Kaplan suggests (i.e., the n-th demonstrative, relative to a context, rigidly designates the n-th demonstratum of the context).

Note also that Kaplan is explicit in this passage about the representational role of the formal context, which is to represent the referents, or extensions, of context-sensitive expressions.²¹ Technically speaking, then, the *formal context* is a bizarre place to incorporate speaker intentions, since they don’t appear to be the content of demonstratives so much as what makes it the case that a demonstrative has some particular content rather than another. As Braun (1996) notes,

²¹ Ball (2017) notes this as one of the answers to what he calls the Context Representation question (“What do the elements of context represent? What does it mean when we include a particular parameter (location, say) in the context?” (p. 106)):

Context represents a concrete situation by giving the extensions that context sensitive expressions would have if uttered in that situation. Each parameter in the context corresponds to a particular context sensitive expression in the language (p. 111).

Contexts [...] include objects that *are* contents, for instance agents, days, locations. Demonstrations are not contents but *determiners* of contents. So to maintain a distinction between contents and their determiners, it is a good idea to exclude demonstrations from contexts (p. 161; original emphasis).²²

Adding a *speaker intention* parameter would thereby make the n-tuple of parameters comprising the *formal context* a heterogeneous bunch, representing objective features (individuals, times, locations) that can serve as contents but also subjective features (intentions) that determine which features can serve as contents – features that seem to play distinct theoretical roles. On the *Bare Bones Theory*, in contrast, the *formal context* retains a uniform theoretical role by representing the contents/extensions of context-sensitive expressions, including demonstratives.

Kaplan's remarks suggest one way to maintain the idea that speaker intentions metaphysically determine the content of demonstratives while preserving the uniform extensional representational role of the *formal context* in a character-based semantics. In particular, one can view the former claim as a metasemantic account of how the values of the parameters of the *formal context* are assigned vis-à-vis a given *speech context*.²³ This would go some way towards accounting for the relevant assumptions required to map *occurrences* on to *utterances*, and would also be consonant with the idea that the role of the *formal context* is akin to that of an assignment function in *providing* values for expressions. An assignment function provides the value of a given free variable *x*, e.g., *x* = Jess. Likewise, if a speaker's intention is what makes it the case that 'she' refers to, say, Jess, then it thereby provides the value of the pronoun, viz., 'she' = Jess. In this sense, speaker intentions would be part of the "context of use", even though for the purposes of representing the context of use in the formal semantics, only demonstrata would be included as parameters in the *formal context*.

²² Braun uses 'demonstration' as we have used "something else," to refer to "the 'extra something' beyond utterance that a demonstrative needs in order to secure a reference" (p. 146) – i.e., speaker intentions according to King and Stokke. Gauker similarly distinguishes "between the *content* of the context and the *determinants* of that content" (2008, p. 361; original emphasis).

²³ According to Kaplan,

The fact that a word or phrase *has* a certain meaning clearly belongs to semantics. On the other hand, a claim about the *basis* for ascribing a certain meaning to a word or phrase does not belong to semantics. [...] because it is a fact *about* semantics, [it should be categorized] as part of the *Metasemantics* (1989b, pp. 573-574; original emphasis).

Predelli (2005) defends this kind of view at length in order to address, *inter alia*, cases involving answering machines and written notes. Predelli follows the *Bare Bones Theory* rather than the *Indexical Theory* to accommodate demonstratives by expanding the *formal context* further to include demonstrata (p. 20), and on his account,

the index [i.e. *formal context*] taken into consideration by the [semantic] system contains co-ordinates intended by the speaker as semantically relevant, even if distinct from the obvious items within the context of utterance/inscription (p. 44).

The “obvious items” are those assigned by the what Predelli calls the *simple-minded view*: “given an utterance *u*, I refer to the index including the speaker and the time, location, and world at which the utterance takes place, as the simple-minded index for *u*” (p. 42). As such, Predelli maintains that speaker intentions have a role to play in terms of assigning the parametric values of the *formal context* with respect to a given utterance event, although they don’t appear explicitly in the framework as parameters of the *formal context*.²⁴

3.3.1 Stokke (2010) and Predelli (2005)

Interestingly, Stokke (2010) claims that ISS is superior to a *Bare Bones Theory* along the lines developed by Predelli (2005) on account of “some distinctions between different kinds of *facts* surrounding utterances and their interpretation” (p. 397; original emphasis).²⁵ To support his claims, Stokke analyses a case in which, talking about Kripke, John Perry utters (6).

(6) I think he is a great philosopher

Stokke catalogues three kinds of facts he deems relevant to Perry’s utterance of (6). First, “Narrow-contextual facts [...] relevant for reference-determination” including F1 and F2:

²⁴ Dowell (2011; 2013) proposes such a metasemantic role for speaker intentions to account for epistemic and deontic modals, and more recently, Åkerman (2015) has defended “intentionalism”, according to which the particular formal context “pertaining to an utterance is the one that is determined by the relevant mental states of the speaker” (p. 477) See Gauker (2010) for critical discussion.

²⁵ More than that, Stokke claims,

the difference between the metaphysical question concerning what constitutes or decides reference and the epistemic question of the evidence used by audiences in a given case can only properly be understood once we have distinguished between these different kinds of facts (p. 397).

(F1) Perry is the speaker of (6).

(F2) The speaker of (6) intended to refer to Kripke with *he* (p. 397).

Second, referential facts, “that a given expression refers to a particular object on a particular occasion of use”, including F3 and F4:

(F3) Perry is the referent of *I*.

(F4) Kripke is the referent of *he* (p. 397).

And third, semantic facts about expressions, e.g., “the fact that *I* has the character it has” (p. 397). Then, Stokke propounds a “fundamental view of how reference works”:

Combinatorial Reference. Referential facts depend on (a) narrow-contextual facts and (b) semantic facts (p. 397).

According to Stokke, “Combinatorial Reference proposes an answer to the metaphysical question of what determines reference on a particular occasion” (p. 397).

Stokke claims that the *Bare Bones Theory* “falls afoul of Combinatorial Reference because it ends up treating referential facts as themselves narrow-contextual facts” (p. 399). More specifically, Stokke’s charge is that the *Bare Bones Theory*

treats reference-determination as circular. If we ask why Kripke is the referent of *he*, the answer we get is (a) because Kripke is the referent of *he* and (b) because *he* has the meaning it does (p. 400).

Stokke’s ISS, on the other hand, “preserves the spirit of Combinatorial Reference”:

if we ask why Kripke is the referent of *he*, the answer we get is (a) because Kripke is intended to be referred to by *he* and (b) because *he* has the character it does. And this is just what we want (p. 400).

This argument, however, is evidently based on a misunderstanding of the *Bare Bones Theory*. Stokke’s argument rests on claims about “*facts* surrounding utterances and their interpretation” but as should be clear by now, the *Bare Bones Theory*, and a character-based theory more generally, is not itself in the business of answering to facts surrounding utterances, or their interpretation by language users without additional assumptions about how *formal contexts* (should be understood to) represent *speech contexts*. Predelli (2005) is rather explicit on this point:

The [semantic] system's results may be applied to an utterance only on the basis of correct hypotheses pertaining to the representation of (among other things) the relevant contextual background in the austere format of a collection of co-ordinates (p. 40).

Accordingly, it is mistaken to suggest that the *Bare Bones Theory* “treats referential facts as themselves narrow-contextual facts” since it doesn't treat of referential facts *per se* whatsoever – and *a fortiori*, remains silent on Combinatorial Reference.

Likewise, it is mistaken to claim that the *Bare Bones Theory* treats (constitutive) reference-determination as circular since on its own it does not treat constitutive reference-determination at all. Asking why Kripke is the referent of ‘he’ with respect to Perry's utterance of (6) is therefore an ill-posed question for the *Bare Bones Theory*. What the *Bare Bones Theorist* could tell Stokke is that, relative to a *formal context* in which Kripke is assigned the (first) *demonstratum*, the referent of ‘he’ in (6) is Kripke. The further question regarding Perry's utterance comes down to the question of why Kripke is assigned as the (first) *demonstratum* of the *formal context* just described (on the assumption that it appropriately represents Perry's utterance for semantic purposes) as opposed to some other assignment. Predelli does take a stand on this issue. According to his version of the *Bare Bones Theory*, the semantically relevant value of the *demonstratum* parameter is the one intended by the speaker, and that value was Kripke. As such, Predelli's answer is presumably not unlike Stokke's, namely, that the speaker intended Kripke to be the *demonstratum* of ‘he’, but there is no circularity issue that arises on Predelli's account, or on the *Bare Bones Theory* more generally.

Stokke's argument against Predelli's *Bare Bones Theory* belies his avowed claim to include speaker intentions in “the kind of contexts that provide arguments for characters” (p. 384) since he appears, much like Salmon (2002), to have a different notion of context in mind from that of the *formal context*. Indeed, Stokke talks of “a character-based semantics which treats intentions as parameters of (narrow) context” (p. 385), where the “narrow context comprises just those facts that determine reference” (p. 399) and is contrasted with “those aspects that the audience uses in reasoning about the speaker's intentions (wide context)” (p. 386). Moreover, Stokke is explicit that “the distinction is one between an epistemic, or evidential, and a metaphysical, or constitutive, role of context” (p. 386). According to Stokke,

intentions do the metaphysical-constitutive work of reference determination in the case of intention-sensitive expressions, and since narrow context is that aspect of context comprising such metaphysical-constitutive factors,

the proposal that intentions are part of narrow context seems natural (p. 390).

The problem with Stokke’s argument against the *Bare Bones Theory* is that he mistakenly assumes that the parameters of the *formal context* represent the metaphysical-constitutive factors of an utterance, that is, the *narrow context*, which is itself apparently an “aspect” of the *speech context*. As I have argued elsewhere (chapter 2, s. 2.5.2), however, the features represented by the *formal context* are not properly understood as metaphysical-constitutive factors when it comes to the content of indexicals (including demonstratives).

3.3.2 King (2014) and Bach (2001)

Despite taking his lead from Kaplan (1989a), King’s claim that speaker intentions should be included in the “semantically relevant context” is also not properly understood as an expansion of the *formal context*. For King, the “semantically relevant context” is “whatever context plays a role in constitutively determining semantic values” (p. 233). Furthermore, King is primarily concerned with rebutting Bach’s (2001) arguments for excluding speaker intentions from the semantically relevant context, which itself is contrasted with the broad, epistemically relevant context.²⁶ Here’s what Bach says about speaker intentions:

²⁶ Bach (2001) writes,

To say that content is determined in context is just to say that it can vary from context to context, whereas to say that it is determined by context is to say that it is a function of context. The latter occurs only when the sentence contains context-sensitive elements whose semantic values are functions of objective contextual parameters. This is context, i.e., contextual information, in the narrow, semantic sense (p. 29).

He is explicit that “The speaker’s communicative intention is distinct from and not part of the context of utterance” (p. 30). King’s initial response is that “the coordination account claims that the semantically relevant context is “bigger”—contains more features—than Bach claims it does” including

the fact that a competent, attentive, reasonable hearer who knows the common ground of the conversation would take the speaker to intend that a certain thing be the value of a given occurrence of a demonstrative must be a feature of the semantically relevant context as well on the coordination account (2014, p. 233).

It should always raise the suspicion of confusion or a terminological debate when, in a dispute between theorists over a contested notion, one of them claim’s their’s is “bigger”.

if context were defined so broadly as to include anything other than linguistic meaning that is relevant to determining what a speaker means, then of course the speaker's intention would part of the context. However, if the context is to play the explanatory role claimed of it, it must be something that is the same for the speaker as it is for his audience, and obviously the role of the speaker's intention is not the same for both (p. 30).

In response, King notes,

Bach is not fully explicit about what he means by “be the same”, but I think he must mean that speaker and hearers have to be epistemically related to the features of the semantically relevant context in the same way [...] Bach's argument here fails because the premise that speaker and hearer must bear the same epistemic relations to features of the semantically relevant context is false (p. 234).

It is evident that neither Bach, nor King, are talking about the *formal context*, since it is would be a matter of confusion to argue about whether or not speakers and hearers bear an (a)symmetric epistemic relation to the *formal context*. Kaplan (1989b) is clear that

The contexts of *Demonstratives* [i.e., 1989a] are metaphysical, not cognitive. They reach well beyond the cognitive range of the agent. Any difference in world history, no matter how remote, requires a difference in context [footnote: As noted, the entire world history is an aspect of context; it is the parameter for the indexical “Actually”.] (p. 597).

The parameters of *formal contexts* represent possible worlds and certain features therein, namely, individuals, times and locations. If the most remote difference in world history results in a distinct assignment of values to the *formal context*, however, it's doubtful such information could ever be within the cognitive range of a speaker or hearer.²⁷

Setting aside the epistemic relation issue, we noted in section 2.5 that the *formal context* is ill-equipped to play a metaphysical role. Rather, what is equipped to play the metaphysical role is the *speech context*. Nevertheless, it's not clear that the debate about *narrow context* has to do with the *speech context* either. On the one hand, the *speech context* locates an utterance in logico-space-time and, as Lewis says, “has countless features, determined by the character of the location.” As such the *speech*

²⁷ Perhaps, then, Bach is right, in that both speaker and hearer bear the same opaque relation to the *formal context*. I discuss this issue in more detail in chapter 4.

context presumably includes all the attendant facts surrounding the utterance, including the intentions of the speaker, the cognitive capacities of the hearer, the demonstrated object, etc. So understood, however, there is little room for debate that the *speech context* includes speaker intentions. On the other hand, the *narrow context*, as discussed by King, Stokke and Bach, is meant to include only those facts that are relevant to the constitutive determination of content. The *speech context*, however, includes all of those facts (whatever they are) and much more besides (e.g., the number of grains of sand on Each Sands, a beach in St Andrews, Scotland).

3.3.3 Context in Context

Discussing Salmon (2002) and Caplan (2003) we noted that claims about how to develop the character-based framework to accommodate demonstratives, and in particular, proposals to “expand” the context, depend on how we construe context and the role it plays in the theory under consideration. King and Stokke’s remarks suggest that they do not in fact construe context as the *formal context* of Kaplan’s formal framework. Indeed, they appear to confuse *occurrences* of demonstratives, in Kaplan’s technical sense, with *utterances* of demonstratives, in the speech act sense. King, for example, speaks of “the value of a use of a demonstrative in context” when introducing his account, which he then suggests we “abbreviate” as “the value of an occurrence of a demonstrative in context” (p. 225), before reverting to discussing the “use of a demonstrative” (p. 226; 229). Meanwhile, Stokke explicitly describes ISS in terms of “the truth conditions of utterances” (p. 396) and appeals to “*facts* surrounding utterances and their interpretation” (p. 397; original emphasis) when arguing that “what the speaker’s intention is in making an utterance is as fit to be a narrow-contextual fact as is a fact like who the speaker is” (p. 397). Furthermore, Stokke is concerned to offer a “proper description of how utterances are produced and interpreted” (p. 399), leading him to talk about “the narrow context of the utterance” (p. 400).

Of course, this isn’t to indict their notion of *narrow context*, but rather to note that despite some of their claims, their theses regarding the inclusion of speaker intentions in the context are independent of, and to some extent, orthogonal to, the development of the Kaplanian character-based semantics. In particular, none of the reasons they advance in support of their theses provides a compelling reason to include speaker intentions in the *formal context*. Nevertheless, assuming the *narrow context* appealed to by King, Stokke, Bach and others is distinct from the *speech context*, there are at least four distinct extant notions of context in the literature, and probably others besides. One takeaway from this discussion is that theorists need to be careful both in

assessing and formulating claims regarding context-sensitivity and notions of context to ensure that they are not speaking past one another.

Claims regarding context-sensitivity and notions of context, however, are themselves embedded in broader theoretical frameworks. Kaplan's (1989a) character-based semantic theory, for example, is "based on the linguistic rules known, explicitly or implicitly, by all competent users of the language" (p. 491, n. 13). The theoretical task, on Kaplan's account, is to explicitly specify speakers' *semantic* competence, which necessarily involves abstracting from certain aspects of natural language use, like temporal duration, as noted above. Performance data – "memory limitations, distractions, shifts of attention and interest, and errors (random or characteristic)"²⁸ – and other non-linguistic aspects of cognition are set aside, insofar as the aim is to model those specifically semantic aspects of speakers' linguistic competence, to the extent they can be isolated. Indeed, evidence concerning (*inter alia*) first language acquisition and the domain-specificity of comprehension and cognitive impairments related to natural language suggest that limiting the scope of inquiry to specifically linguistic competence is well motivated.²⁹ Additionally, while a theory of semantic competence will undoubtedly figure in a more comprehensive theory of linguistic communication, the former is distinct from and need not presuppose the latter. Thus, semantic competence is also modeled in abstraction from considerations about communication and its constitutive features. As Kaplan puts it, the theory is "concerned not with the vagaries of actions, but with the verities of meanings" (1989b, p. 585).

The overarching aim of Kaplan's framework is significant insofar as it stands in stark contrast to some subsequent accounts of context-sensitivity. For example, Gauker (2008) is explicit that, a semantic theory "stands in the service of a theory of linguistic communication," where the latter "takes place (at some shallow level at least) when the hearer interprets the speaker's utterance as expressing the proposition that it does in fact express" (p. 361).³⁰ Unlike with Kaplan, considerations about communication guide Gauker's semantic theorizing, leading to questions about what a hearer needs to know in order to correctly interpret a speaker's utterance. On this basis, Gauker denies any role for intentions in semantics and concludes that, "the proposition expressed by

²⁸ Chomsky (1965, p.1).

²⁹ It would go beyond the scope of this paper to discuss the issue of modularity in detail. See Crain and Pietroski (2002), Borg (2004), Pietroski (2006) for discussion. See Curtiss (2013) for a recent survey of empirical evidence concerning the modularity of linguistic cognition.

³⁰ Similar remarks can be found elsewhere. E.g., Stalnaker (2014) argues that "our semantics is supposed to be a part of a more general theory of communication" (p. 23). This way of putting it is compatible with Kaplan's project, which need not speak to, and indeed, remains silent on, what part semantics is to play in such a theory.

an utterance has to be one that a competent hearer could assign to it using a method of interpretation” that is both reliable and based on information that is typically accessible to the hearer (p. 362).

Moreover, whereas Kaplan’s framework purports to explicitly characterize the semantic rules competent speakers have in virtue of knowing their language, and is thus broadly descriptive, Gauker views semantics as inherently normative, “best conceived as the construction, or codification, of a system of norms” and thereby articulating rules “that people ought to conform to regardless of whether they do” (p. 370). And rather than focus on the referential properties that hold of demonstratives independently of the actions of speakers and hearers, as Kaplan does, Gauker prefers to “identify the relation between a demonstrative and its referent as the object of a certain sort of judgment [...] that the users of the language can competently make” even if they don’t always do so (p. 370).

Arguing against Gauker, Åkerman (2009) defends the coherence of communication when speaker intentions are accorded a role. Likewise, Montminy (2010) defends what he calls “intentionalism”, the view that “the content of an utterance is fixed by the speaker’s intention” (p. 2910). And here, too, considerations of communication are front and center. Montminy is mainly concerned to clear up confusions about intentionalism, which he claims “offers a more plausible picture of communication than anti-intentionalism” (p. 2910). Moreover, diverging ever further from Kaplan’s theoretical project, Montminy is clear that “intentionalism” concerns “not sentence meaning, but utterance content, or speaker meaning, as it is sometimes described” (p. 2911). Kaplan, in fact, is equally explicit: “My semantical theory is a theory of word meaning, not speaker’s meaning” (p. 491, n. 13).

Beyond claims of context-sensitivity and notions of context, it is important to be clear about the aims and constraints of the broader theoretical frameworks adopted by distinct theorists, which can equally give rise to confusion and apparent tension between distinct claims regarding language and its use. The proposals to include speaker intentions in the context likewise need to be understood within King and Stokke’s broader theoretical frameworks. But whatever those frameworks are, they don’t appear to be Kaplanian character-based frameworks on account of the notion of context that is appealed to. Insofar as it is not always clear what theoretical framework King and Stokke are assuming, they would do well to define their terms more explicitly. In particular, if they aim to employ a character-based semantics, they need to define their notion of character with respect to context-sensitive expressions, in addition to

that of context, given that extant notion of character is defined in terms of the *formal context*.

3.4 What is Needed for Semantics

A *formal context* provides whatever is needed for the semantics of indexicals. Above I argued that speaker intentions were not needed for the semantics of indexicals so much as demonstrata, and that, following Kaplan, Braun and Predelli, the *formal context* should include the latter but not the former. I now want to consider a different angle from which King and Stokke might argue that speaker intentions are needed and show why it is problematic. This has to do with a claim about the semantics of demonstratives essentially appealing to recognizable speaker intentions. If a lexical item, as part of its encoded semantic properties, appeal to speaker intentions, then this is another sense in which speaker intentions could be needed for semantics.

A distinguishing feature of both King and Stokke's accounts is that speaker intentions are constrained to be recognizable by the hearer. On King's coordination account, it is part of "the lexical meanings of demonstratives to require that a use of a demonstrative be supplemented by a speaker's intention that is recognizable by an ideal hearer" (p. 229). And according to Stokke, "the meanings of expressions like *he*, *that*, or *now* are 'looking for' an intention which will fix their reference" (p. 403) and they can only see, as it were, an intention "if the audience is in a position to recognize it" (p. 402). According to both accounts, then, the characters of the relevant expressions require that the speaker's intentions in using them are made recognizable to their interlocutors in order to secure a referent.³¹

Positing that the encoded semantic features of demonstratives make essential appeal to speaker intentions in this way is otiose, however, since it encodes conditions on the use of specific expressions that are already given by more general considerations regarding language use. In accordance with Grice's Cooperative Principle (and in particular, the maxim of manner: "Be perspicuous."), it seems that we can already explain, as a matter of general, rational requirements on interpersonal communication that a speaker will employ a linguistic expression only under the assumption that their

³¹ If this characterization sounds familiar, it should. In the development of his account of speaker meaning, Grice writes, " 'A meant_{NN} something by *x*' is (roughly) equivalent to 'A intended the utterance of *x* to produce some effect in an audience by means of the recognition of this intention' " (1989, p. 22).

audience can recognize their intended use of the expression.³² But importantly, this requirement applies regardless of whether or not the speaker uses a demonstrative, and so the constraint is not a plausible constraint on demonstratives per se.

To illustrate, consider a speaker who knows that her audience does not know who Alex is or what philately is. In that case there is a sense in which it is unreasonable for her to utter (7), and expect the audience to recover the semantic value of the sentence.

(7) Alex has taken up philately

As King might say, “the speaker failed to discharge her responsibility to be understandable.” But the responsibility to be understandable is a condition on *communication*, or the *use* of expressions, not on the semantic properties of expressions themselves. By not discharging this responsibility, it does not follow that the speaker has used the words in the sentence incorrectly, as in a case where she uses the phrase ‘stark contrast’ to mean negligible difference. On King and Stokke’s accounts, however, had the speaker instead uttered, ‘He’s taken up philately,’ she would have misused the word ‘he’. Similarly, were the speaker to utter ‘That’s it!’, perhaps having realized the solution to a nagging problem, but which her interlocutor was completely unaware and had no reasonable chance of understanding, the speaker would have misused both ‘that’ and ‘it’ and not secured a referent for either by not making the intended referents of those demonstratives recognizable to the interlocutor.

Lepore and Ludwig (2007) rightly note “[i]t would be fatuous to claim that [the speaker] does not succeed in referring” in such cases (p. 113, n. 61). They write,

We can use a pure demonstrative to refer to anything; we can be successful in communicating using a demonstrative if we can get our audience to understand what it is that we are referring to. This is why we so often use demonstratives to refer to salient objects in the environment or point to objects when using demonstratives, but these features of the typical use of demonstratives are clearly incidental, despite the attention which they have received in the philosophical literature (n. 61, p. 113).

The semantic properties that belong to an expression, in virtue of which it refers, are distinct from the conditions for successfully communicating with an expression bearing those properties. For this reason, the very invocation of the capacities of (idealized) hearers in the specification of the semantic properties of linguistic expressions

³² Obviously one need not buy into the entire Gricean program in order to acknowledge the plausibility of the Cooperative Principle.

seems misguided. As Siegel (2002) observes, “semantic reference does not depend on the perspective of the addressee, whether it be a perceptual perspective or a set of background beliefs” (p. 19). Indeed, after deciding that demonstrations merely serve to externalize intentions, Kaplan (1989b) was clear that “[t]he externalization is an aid to communication, like speaking more slowly and loudly, but is of no semantic significance” (p. 582), adding, “the demonstration [...] is there only to help convey an intention and plays no semantical role at all” (p. 583-584).

Insofar as a posited semantic property of an expression can be explained in terms of more general considerations regarding the use of language, there is no reason to maintain that property is genuinely semantic, or that it is associated with particular expressions. This is the guiding principle underlying “the general Gricean strategy of trying to reduce the burden on semantics by explaining as much of the phenomena as possible in terms of truisms about conversation as a rational activity.”³³ As such, it hardly seems to be a virtue of King’s account that it purports to explain semantic features of demonstratives in terms of what is “*required for successful communication*” because requirements governing communication pertain to communication, not to linguistic expressions *per se*.

3.5 Conclusion

I have argued, against King and Stokke, that speaker intentions should not be included in the context of a character-based formal semantic theory. Adding speaker intentions to the *formal context* misconstrues its theoretical role in a character-based framework, which is effectively to catalogue candidate contents for context-sensitive expressions. Speaker intentions, in contrast, are *determiners* of content(s) rather than contents themselves, as King and Stokke would agree. Evidently, King and Stokke’s proposal to include speaker intentions in the context implicitly invokes a notion of context distinct from that found in a Kaplanian character-based semantics. Furthermore, the constraint that speaker intentions be recognizable to the hearer/audience in the case of demonstratives is redundant in light of more general Gricean considerations regarding rational requirements governing interpersonal communication.

In order to make sense of what is being appealed to when context is invoked in the philosophy of language, it is important to clearly distinguish and track the distinct notions of context at play in various debates about language and its use. Not all theorists appeal to the same notion of context, and as a result not all claims about

³³ Stalnaker (1998), p. 18.

context-sensitivity can be directly compared. A related issue is how to understand the relations between the distinct notions of context in the literature. It seems reasonable to assume that the distinct notions of context must be related in some way given that all of them are ultimately concerned with language and its use. Further research into these relations is important in order to properly evaluate the connections between the larger theoretical frameworks that have been developed to pursue inquiry into natural language.

Chapter 4

Context Two Ways: Metaphysical and Epistemic

4.1 Introduction

Two notions of context figure prominently in contemporary theories of semantics and pragmatics. The first is a metaphysical notion specifically relevant to formal semantics for the purposes of assigning content to indexical expressions. The second is an epistemic notion that construes context as a body of information that interlocutors exploit in order to convey information. Though the two notions are presumably related to one another, given that language users convey information to one another through the use of (*inter alia*) indexical expressions, the exact nature of the relation has rarely been explicitly addressed. Understanding the relation is significant in order to resolve an underlying tension concerning epistemic accessibility with respect to semantics.

On the one hand, it seems as though speakers can use language to refer to aspects of the external world, even despite occasional confusion about those features. The metaphysical notion of context is well suited to account for this since it represents the mind-independent aspects of possible worlds. Nevertheless, on account of being mind-independent, speakers can in an important sense be blind to those features of the external world that they purport to refer to – including the actual world itself – raising issues about how language users successfully communicate about such features. On the other hand, successful communication seems to be a matter of cooperation on the basis of mutually shared assumptions about the surrounding environment. The epistemic notion of context is well suited to account for this since it represents the body of information that is shared between interlocutors. Nevertheless, on account of speakers' susceptibility to confusion and ignorance about their surrounding environment, it's

not obvious how speakers use language to make contact with the external world, as opposed to the world as they take it to be.

The main purpose of this chapter is to elucidate how to understand the relation between these two notions of context, which will include getting a clear handle on the notions themselves. More specifically, the aim will be to articulate and evaluate two possible ways of understanding the relation recently suggested by Stalnaker (2014), according as to which notion has conceptual priority. Stalnaker's brief discussion of the relation is not conclusive, but suggests that he favours construing the epistemic notion of context as prior to the metaphysical notion, as do others.¹ By articulating the proposed relations in further detail, I hope to make explicit the reasons motivating each of them as well as for Stalnaker's preference. My main contention will be that both ways of construing the relation depend on a particular understanding of the metaphysical notion of context.

I begin by introducing the two notions of context by way of two representative examples from the extant literature. Kaplan's (1989a) *context of use* is the paradigm of a metaphysical notion of context, and I will explain and characterize its role within Kaplan's character-based semantic framework. I then articulate Stalnaker's (1978) notion of the common ground between conversational participants, a paradigm example of an epistemic notion of context, and the role it plays in Stalnaker's possible-worlds based pragmatic framework. With the two notions of context at hand, I then proceed to consider in detail the two ways of understanding the relation between them that Stalnaker (2014) suggests. This will allow me to tease out some undesirable consequences for each way of understanding the relation that turn on how the respective notions of context are understood.

4.2 Two Notions of Context

4.2.1 Kaplan's Metaphysical Notion of Context

Kaplan (1989a) introduces a formal framework for modeling the semantics of languages containing indexical expressions, such as 'I', 'today', 'here', 'she', 'them' etc. Depending on when, where, and by whom, such expressions are used, they can pick out distinct individuals, times and locations. 'I am the best candidate for president', for example, expresses different propositions in different mouths: when Bernie Sanders utters, 'I am the best candidate for president', the content of 'I' is Bernie Sanders, and when uttered

¹ For example, Wettstein (1974), Gauker (2008), Stokke (2010) and King (2014).

by Donald Trump, it is Donald Trump. Radically different propositions are expressed in each case. Nevertheless, even though distinct speakers can say different things when uttering ‘I am the best candidate for president’, the same sentence-type is used in each case. And insofar as they share a common linguistic form without ambiguity, distinct utterances of such expressions would seem to share certain semantic properties.

Kaplan’s framework captures and encodes this distinction between the two levels of meaning associated with indexical expressions. The shared semantic aspect of an indexical expression, common to all its uses, is captured at the level of *character*, which “applies only to words and phrases as types” and captures the repeatable, invariant semantic properties of such expressions (1989a, p. 524). In contrast, the level of *content* varies with context and corresponds to the distinct individuals, times and locations picked out by distinct occurrences of such expressions.² The upshot of the character-content distinction was to isolate the invariant features of context-sensitive expressions in their character, defining them as rules that appeal to certain aspects of context to yield distinct, determinate contents, and thereby account for the variable contents of distinct utterances of such expressions.

Kaplan also drew a distinction between two kinds of indexical expressions. *Pure indexicals* (e.g., ‘I’, ‘here’, ‘now’, ‘today’) have their content fixed simply in terms of “brute facts of the context, like location and time” (1989b, p. 588). “The linguistic rules which govern *their* [i.e., *pure indexicals*] use fully determine the referent for each context” (1989a, p. 491). For example, ‘now’ picks out the time of the context as its content. The contents of *true demonstratives* (e.g., ‘we’, ‘she’, ‘those’, ‘there’), on the other hand, do not vary strictly in virtue of the “brute facts of the context.” According to Kaplan, “[t]he linguistic rules which govern the use of the true demonstratives [...] are not sufficient to determine their referent in all contexts of use. Something else [...] must be provided” (1989a, p. 490). For example, ‘then’ can potentially pick out any time (save that of the context), but which particular time is not settled by “brute facts of the context” and instead must be fixed by “something else”.

For the sake of simplicity, I will focus discussion in what follows on the case of *pure indexicals* (hereafter simply indexicals), setting aside *true demonstratives*. Although the discussion here is relevant to *true demonstratives*, they raise further complications of their own that would take us too far afield to adequately address.³ Besides, the

² Although Kaplan makes a distinction in his framework between intension (content) and extension (referent), I will use ‘content’ and ‘referent’ interchangeably in what follows. On the assumption that indexicals are rigid designators, the distinction effectively collapses in the cases under discussion.

³ The complications include the status of the “something else” required in order to determine a referent, and the related issue of whether, and how, to increase the number of parameters included

issues with how to understand the relation between the two notions of context that I am interested here in can be raised in the case of indexicals, and so we need not worry about the complications raised by *true demonstratives*. The basic feature of an indexical that is important is that it is associated with a character that determines its referent relative to a *context of use*, regardless of the user's attendant beliefs, intentions or actions.

Despite his suggestions that the context of use represents the “brute facts of the context” in which language is used, Kaplan's notion of context is rather more abstract. He notes, for example,

it is important to distinguish an *utterance* from a *sentence-in-context*. The former notion is from the theory of speech acts, the latter from semantics. Utterances take time and utterances of distinct sentences cannot be simultaneous (i.e., in the same context). But to develop a logic of demonstratives it seems most natural to be able to evaluate several premises and a conclusion all in the same context (1989b, p. 546; original emphasis).

As Kaplan's remarks suggest, his notion of context is idealized and invoked primarily in the service of exploring the logical relations of sentences containing indexical expressions.⁴ That is, the *context of use* is a formal representational tool that allows contents to be assigned to indexical expressions independent of considerations of language use and utterance events. In fact, an *occurrence* of an indexical (or *sentence-in-context* in the case of a sentence containing an indexical) is Kaplan's technical term for “the mere combination of the expression with the context,” and in this sense, “an occurrence requires no utterance” (1989b, p. 584). Thus, Kaplan's theory assigns a content to sentences whose utterance could never be felicitous, but which it seems could nevertheless express truths, such as ‘I am not speaking’, which is true provided the value of the *agent* parameter of the *context of use* is not speaking at the circumstance of evaluation.⁵

Kaplan encourages us to construe “context in this more abstract, formal way, as providing the parameters needed to generate content” (1989b, p. 591). Accordingly, it is

in the *context of use*. See Chapter 3 for discussion. See also Braun (1996), Stokke (2010), and King (2014).

⁴ Similar remarks are found elsewhere: “Utterances take time, and are produced one at a time; this will not do for the analysis of validity” (1989b, p. 584). The notion of context also plays an ineliminable role in the definition of truth in Kaplan's system (1989a, p. 522).

⁵ Similarly, Moore's paradox (‘*P*, but I don't believe *P*’) is unproblematic within Kaplan's formal system, and is assigned the content that is true just in case *P* is true and the agent of the *context of use* does not believe *P* (1989b, p. 585).

important to be clear on the relation between the *context of use* and what (metaphysical possibilities) it represents. The *context of use*, recall, is a quadruple of parameters, $\langle agent, time, location, world \rangle$, which correspond to aspects of contexts, themselves defined in terms of possible worlds, though not all possible worlds contain contexts. Kaplan writes,

not every possible circumstance of evaluation is associated with an (appropriate) possible context of use, in other words, not every possible-world is a possible actual-world. Though there may be circumstances in which no one exists, no possible context of use can occur in such circumstances (1989b, p. 597).

This constraint ensures that ‘Something exists’ is necessarily true in Kaplan’s formal language, the *Logic of Demonstratives* (LD).

Kaplan further restricts the set of possible worlds that contain contexts to include only those “proper” ones such that the agent is located at the location at the time in the possible world (1989a, p. 509). Predelli (2005) argues that “the decision to restrict the [semantic] system’s attention to proper indexes [i.e., *contexts of use*] turns out to yield empirically inadequate results” on account of (*inter alia*) answering machine cases (p. 62).⁶ According to Kaplan, though, this restriction is grounded in our a priori knowledge of the actual world, namely, “our knowledge that certain *facts* always hold at a world containing a context” (1989b, p. 597; original emphasis). Indeed, such “proper” contexts are important for Kaplan’s logical results, since if these parameters could vary freely, ‘I am here now’ would not be true in all *contexts of use*, though, as Predelli notes, it would always be “*warrantedly utterable*” (2005, p. 60).

Given the restriction to “proper” contexts, Kaplan’s notion of a *context of use* can be thought of as representing a *centered possible world*, consisting of a possible world and an agent in that world at a time in that world.⁷ Nevertheless, as we noted, the agent need not be speaking at the time in the possible world represented by the *context of use*. In other words, the *centered possible world* need not be centered on an utterance. As such, the *context of use* represents, in the first place, certain predictable features of the class of possible worlds that include individuals, though not necessarily

⁶ E.g., ‘I’m not here right now’ recorded and played on an answering machine. Kaplan (1989a) notes this kind of case, but does not address it in detail (p. 491, n. 12). Cf. Predelli (2005) ch. 2, s. 4 for discussion.

⁷ Although Kaplan construes the location as a “brute fact” of the context on a par with the agent and time, the value of the *location* parameter can be derived from the location occupied by the agent at the time in the *centered possible world*.

actual utterance events or situations of language use. This is significant in that, as Caplan (2003) notes, Kaplan's

semantics tells us about sentences, not utterances, relative to contexts; by itself, semantics doesn't tell us anything about utterances. If we want to use semantics to figure out something about utterances, then we're going to have to find a way to take what semantics tells us about sentences relative to contexts and use that information to figure out something about utterances (p. 194, n.10).

In other words, Kaplan's framework cannot be directly applied to linguistic utterances without some further assumptions about how the latter are represented by the former.⁸ Whatever its relation to everyday situations in which natural language use occurs, Kaplan's metaphysical notion of context has a well defined role to play (as a tool to assign contents) within his formal semantic framework for modeling languages containing indexical expressions, and as such is useful for investigating logical consequence and deriving logical truths in such languages. Indeed, according to Kaplan, "the most important and certainly the most convincing part of my theory is just the logic of demonstratives itself" (1989a, p. 487).

4.2.2 Stalnaker's Epistemic Notion of Context

Stalnaker's notion of context plays a fundamental role in his broader theoretical project of offering a detailed pragmatic account of how speech acts, and in particular assertions, impact the state of information in which they occur. In the initial presentation of his framework, Stalnaker (1978) notes four "truisms about assertions" that guide the formulation of his theory. First, acts of assertions express propositions, each of which represents a certain possible state of the world. Second, each act of assertion occurs in a context, "a situation that includes a speaker with certain beliefs and intentions, and some people with their own beliefs and intentions to whom the assertion is addressed" (p. 78). Third, the content of a proposition expressed by an act of assertion can depend on features of the context in which it occurs such as "who is speaking or when the act of assertion takes place" (p. 78). And lastly, the purpose of an act of assertion is to change the state of information that forms the background against which the act occurs, specifically the beliefs of the addressees of the act, though of course, "how the assertion affects the context will depend on its content" (p. 78).

⁸ Regretably, Kaplan himself does not discuss any such assumptions. See Caplan (2003) and Predelli (2005) for discussion.

Stalnaker articulates a number of theoretical concepts that together allow for a more precise description and explanation of these truisms, the most important of which, for our purposes, is the *common ground* between conversational participants. The *common ground* is comprised of whatever propositions are mutually presupposed by the parties to a conversation.⁹ That is, the only propositions that are in the *common ground* are those that the speaker presupposes her addressee(s) to presuppose, that the speaker presupposes her addressee(s) to presuppose the speaker presupposes, that the speaker presupposes her addressee(s) to presuppose the speaker presupposes her addressee(s) to presuppose, etc.

Stalnaker qualifies the intended notion of presupposition as follows.

The propositions presupposed in the intended sense need not really be common or mutual knowledge; the speaker need not even believe them. He may presuppose any proposition that he finds it convenient to assume for the purpose of the conversation, provided he is prepared to assume that his audience will assume it along with them. (p. 84).

More recently, Stalnaker (2014) has defined the common ground in terms of an attitude of “acceptance for the purposes of the conversation” which he suggests is structurally similar to belief (p. 123). The state of information in which assertions and other speech acts occur is characterized by the propositions that are mutually presupposed, in this sense, and hence need not be true, since the participants might be mistaken about the facts of the situation they find themselves in, or be operating under the pretense of a hypothetical or counterfactual situation in accord with the purpose of the conversation.

Stalnaker endorses a possible worlds account of propositions according to which a proposition is a function from possible worlds to truth-values, or, equivalently, just the set of possible worlds in which it is true. As such, even though the state of information in which an assertion occurs is comprised of propositions, namely those that are presupposed by the conversational participants, “the more fundamental way of representing the speaker’s presuppositions is [...] as a set of possible worlds, the possible worlds compatible with what is presupposed,” which Stalnaker calls the *context set* (p. 84). Thus defined, the *context set* consists of all of the ways the world could be that are not ruled out by what the conversational participants mutually assume about their occurrent situation – the “live options”, as it were, for which world they are

⁹ Stalnaker characterizes this kind of presupposition in terms of the dispositions of speaker-hearers: “A proposition is presupposed if the speaker is disposed to act as if he assumes or believes that the proposition is true, and as if he assumes or believes that his audience assumes or believes that it is true as well” (p. 84).

located in. Accordingly, we can “[t]hink of a state of a context at any given moment as defined by the presuppositions of the participants as represented by their context sets” (p. 86).

On Stalnaker’s account, the general purpose of conversation is to modulate the *context set* in a way that allows the participants to situate themselves amongst the “live options”. Assertion, in particular, affects the context set in two ways. First, whenever one conversational participant speaks, uttering certain expressions in a certain manner, this information is immediately incorporated into the *context set*, so long as it is mutually assumed to be accessible to the participants. For example, facts about who is speaking “can be exploited in the conversation, as when Daniels says ‘I am bald’, taking it for granted that his audience can figure out who is being said to be bald” (p. 86). The second way in which the *context set* is affected by an assertion is by incorporating the proposition expressed by the assertion, so long as the assertion is not rejected by any of the conversational participants. In such a way, the act of assertion updates the *context set* by eliminating the possible worlds that are not compatible with the proposition expressed. So if Daniels’s assertion is accepted, then the updated *context set* is one that no longer includes any possible worlds in which Daniels is not bald.

4.3 Relating the Two Notions of Context

4.3.1 Two Ways of Construing the Relation

Stalnaker (2014) notes that the two notions of context under consideration are not in competition for playing the same theoretical role, but are rather complimentary notions within respective accounts of semantics and pragmatics. Nevertheless, he admits that the relation between the two notions is not always explicit and that it needs to be explained. To this end, he offers two ways of construing the relation between the distinct notions of context. According to the first way, the metaphysical context constitutively determines the epistemic context such that the doxastic and epistemic states of the individuals in a given situation are simply facts flowing from the parametric values of the metaphysical context. Call this the *metaphysics first* construal of the relation: the metaphysical context “includes a whole possible world along with a designated agent and time, and it will be a fact about the individual in the world at the time that he or she is presupposing certain propositions, and that certain propositions are common ground in the conversation that the individual is

participating in at the time” (p. 26). Once you fix the facts of the metaphysical context, including the possible world, the rest of the facts, including those concerning the cognitive states of the conversational participants, are thereby determined.

Alternatively, “one might think of the common ground as something like a set of K[aplan]-contexts, rather than a set of possible worlds” (p. 26). Given that conversational participants are, generally speaking, uncertain about which world is the actual one, engaging in conversation in order to locate themselves amongst the “live options”, the *common ground*, on this construal, determines a set of *contexts of use*, namely all those whose values are compatible with the propositions that are mutually presupposed by the conversational participants. Stalnaker writes,

A propositional attitude such as belief or acceptance for the purpose of the conversation can be represented by a set of *centered* possible worlds, since the subject of the attitude will locate herself in the world as she takes it to be. An iterated attitude concept such as common knowledge or common ground might be represented by a set of possible worlds with multiple centers, one for each of the members of the relevant group (p. 26; original emphasis).

On this *epistemic first* construal of the relation, a given utterance is not associated with a single assignment of values to the Kaplanian quadruple, $\langle \textit{agent}, \textit{time}, \textit{location}, \textit{possible world} \rangle$, but rather the set of all those quadruples of values (or centered worlds) compatible with propositions mutually presupposed by the parties to a given conversation.

According to Stalnaker, both of these ways of construing the relation between the metaphysical and the epistemic notions of context are in fact compatible. Even so, he appears to favour the *epistemology first* construal. Ultimately, of course, theoretical notions like the *context of use* and the *common ground* are characterized by the roles they play in the theories in which they are invoked, and so they need not bear any particular relation to one another unless the theories in which they are embedded do. But while Stalnaker claims that the two notions of context are complimentary, it is not immediately clear that either way of construing the relation between the two notions of context is appropriate given the Kaplanian account of the metaphysical context.

4.3.2 Truth vs. Interpretation

The first important thing to note about Kaplan’s theoretical notion of context, in contrast with Stalnaker’s, is that it is formulated without making any appeal to

utterance events, speech acts, the purpose(s) of conversation, propositional attitudes such as belief or presupposition, addressee(s), or even speakers (recall that the *context of use* has an *agent*, rather than a *speaker*, parameter). To be sure, Kaplan has “sometimes said that the content of a sentence in a context is, roughly, the proposition the sentence would express if uttered in that context” – though he notes that “[t]his description is not quite accurate on two counts” (1989a, p. 522). First, as noted, Kaplan is careful to distinguish his semantic notion of an expression in context from one that would figure in an account of utterances and speech acts. As he puts it, the theory is “concerned not with the vagaries of actions, but with the verities of meanings” (1989b, p. 585). In this sense, Kaplan’s is a traditional semantic theory that deals with word-world relations and is concerned with the properties of language as such – “the semantic mechanisms whereby indexicals and demonstratives are connected to their referents” – rather than what speakers do with language.¹⁰ Second, the truth of sentences containing indexicals is relativized to a context – an abstract formal structure – whereas a proposition expressed by an actual utterance is generally taken to be true *simpliciter* if true at all.

On Kaplan’s account, the indexical expressions of the language are associated, in virtue of their semantic properties, with rules that determine their content in any possible context, i.e., any possible world containing an agent at a location at a time in that world. That is, Kaplan’s characters are defined over the set of centered possible worlds, which, we noted, is subset of the set of possible worlds. Put informally, in the case of ‘I’, for example, “[t]he speaker refers to himself when he uses ‘I’, and no pointing to another or believing that he is another or intending to refer to another can defeat this reference” (1989a, p. 491). So when Daniels utters the sentence ‘I am bald’, for example, what is said – the content expressed by the sentence relative to the *context of use* in which Daniels is the value of the *agent parameter* – is the proposition *that Daniels is bald*, regardless of whom Daniels believes himself to be, or what an addressee of such an assertion believes about the speaker. And the content of the sentence relative to that *context of use* is true just in case Daniels is bald in the possible world that is the value of the *possible world* parameter of that *context of use*, regardless of what world Daniels, or anyone else, believes he inhabits (and, indeed, regardless of whether Daniels even utters the sentence at all).

¹⁰ (1989b), p. 576. Kaplan (1978) took his theoretical lead from the “Golden Age of Pure Semantics” which aimed at “developing a nice homogeneous theory, with language, meaning, and entities of the world each properly segregated and related to one another in rather smooth and comfortable ways” (p. 223).

A peculiar result of Kaplan's account of indexical expressions is the possibility of what I'll call, following Åckerman and Greenough (2010), *content blindness*.

Content Blindness: The speaker is ignorant of what (Kaplanian) content is expressed by an utterance of a sentence containing an indexical.

This result is peculiar insofar as Kaplan takes his notion of content to capture, in some sense, our pre-theoretic notion of "what is said" when an individual utters a sentence.¹¹ It would be odd if Kaplan had explicated such a notion in a way that speakers could be ignorant of "what is said" given that, pre-theoretically, speakers are presumably aware of what they say. Nevertheless, it is clear that speakers and hearers are susceptible to *content blindness* given Kaplan's account. For example, if Daniels is talking to O'Leary, but both are mistaken and take Daniels to be Jones and O'Leary to be Smith (where Daniels \neq Jones and O'Leary \neq Smith), then when Daniels utters 'I am bald', what is said – the content of the sentence relative to the *context of use* in which Daniels is the value of the *agent* parameter – is *that Daniels is bald*, even though both Daniels and O'Leary will take the former to have said *that Jones is bald*. For on Kaplan's account "[i]gnorance of the referent does not defeat the directly referential character of indexicals" (1989a, p. 536).¹²

More peculiar still, if we consider this case from the perspective of Stalnaker's pragmatic theory, we see that the content delivered by Kaplan's theory need not play any role in successful communication. Consider the case just mentioned in which Daniels is addressing O'Leary and asserts 'I am bald'. What is in the *common ground* is that Jones and Smith are participating in a conversation, and when the former utters the sentence 'I am bald', the *context set* – the set of possible worlds consistent with the *common ground* – is updated in two ways. First, it becomes part of the *common ground* that Jones has just asserted that he is bald, and he did so under the assumption that the contextual information relevant to interpreting the utterance – namely, whom the speaker is – is available to Smith. Second, provided that O'Leary accepts the proposition asserted by Daniels, the *context set* is updated to reflect the content of the proposition: the *context set* is reduced to include only those possible worlds in which Jones is bald.

While the *context set* so updated by Daniels's assertion is, so far as the description of the case goes, compatible with Daniels being bald, it is also compatible with Daniels

¹¹ For example, Kaplan (1989a) remarks, "I began my investigations by asking what is said when a speaker points at someone and says, 'He is suspicious.'" [in Kaplan (1978)]" (p. 489).

¹² Thus, similar cases can easily be constructed for the other indexicals that target the time ('now', 'today'), location ('here') and world ('actually') of the utterance.

not being bald. More importantly, however, the updated *context set* does not include any possible worlds in which Daniels just addressed O’Leary and uttered the sentence ‘I am bald’, since it is mutually presupposed that Jones just addressed Smith and uttered the sentence ‘I am bald’, and the participants to the conversation are ignorant of the fact that the individuals they mutually believe to be Jones and Smith participating in a conversation with one another are in fact Daniels and O’Leary, respectively. In other words, Daniels and O’Leary are involved in a conversation with each other in which their respective *contexts of use* are not a part of the *context set*. Stalnaker (2014) writes,

When a statement is made in a possible world x , the world of the context (in the Kaplan/Lewis sense) is world x , whatever the speaker may believe and whatever may be presumed common knowledge that defines the context in the other [epistemic] sense. The context set that defines the common ground for the speaker in a given K[aplan]-context will not even include the world of the [Kaplan] context, if the participants happen to be presupposing something that is in fact false (p. 29).

Nevertheless, it seems that Daniels succeeds in *communicating* with O’Leary since they both come to believe what Daniels intended them to believe as a result of his utterance, namely, *that Jones is bald*. Moreover, communication was successful despite the fact that Daniels and O’Leary are both ignorant of the content, or what was said, delivered by Kaplan’s account, which is *that Daniels is bald*. Thus, rather counter intuitively, Kaplan’s notion of “what is said” does not necessarily figure in an account of successful communication.

Given the possibility not only of *content blindness* on Kaplan’s account, but that successful communication can occur in the face of *content blindness*, we can see why Stalnaker might prefer the *epistemic first* construal of the relation between the two notions of context. The epistemic notion of context has an important role to play when it comes to the interpretation of concrete utterance events and an explanation of the dynamics of communication. As Stalnaker (2014) notes,

The “contexts” that are relevant to interpreting what [a speaker] said are the K[aplan]-contexts that are compatible with the common ground, and not the actual K-context in which the statement is made (p. 30).

The *epistemic first* construal gets this right by associating an utterance with the set of *contexts of use* compatible with the *common ground*. The metaphysical notion, on the

other hand, has a role to play when it comes to the truth of propositions expressed by sentences containing indexical expressions, regardless of the beliefs or intentions of speakers and hearers. Nevertheless, it appears to be explanatorily idle when it comes to accounting for utterance interpretation and linguistic communication.

Stalnaker in fact suggests a more fundamental reason to avoid the *metaphysics first* construal in light of his broader conception of conversation as a process whereby conversational participants aim to locate themselves within the “live options” of the *context set*. He notes that,

the information about what specific possible world we are in cannot be part of the information represented by the context set – the information that is presumed to be available, in common, to the participants in the conversation. (If it were, context sets would all be unit sets, and communication would be unnecessary.) (2014, p. 29).

In the above Daniels-O’Leary case, the participants were merely ignorant of the actual identity of the speaker (i.e., the correct value of the *agent* parameter), but given Stalnaker’s account of (the purpose of) communication, the participants had better be ignorant of the actual world they are in (i.e., the correct value of the *possible world* parameter). For if the aim of conversation is, generally speaking, to whittle down the number of possible worlds consistent with what is mutually presupposed by the conversational participants so that they (might) eventually ascertain which world they actually inhabit, then if it is part of the *common ground* which world they actually inhabit, the game is over.

In light of the overarching conception of conversation underlying Stalnaker’s pragmatic account, then, the parties to any particular conversation are presumed to be ignorant of which particular possible world they are in, and hence, which metaphysical context they are a part of. In fact, this is not surprising given the way Kaplan individuates *contexts of use* in terms of possible worlds, which he acknowledges are beyond the ken of actual speakers.¹³ But it’s worth noting that this entails that *content blindness* is necessary and not merely a possibility. And this, in turn, raises serious doubts about what role, if any, the metaphysical notion of context has to play in a pragmatic account of communication, and hence what role Kaplan’s theory of indexicals might play when accounting for real life situations in which natural language is used. I return to this worry below (s. 4.4.3).

¹³ Kaplan notes, “The contexts of *Demonstratives* [1989a] are metaphysical, not cognitive. They reach well beyond the cognitive range of the agent. Any difference in world history no matter how remote, requires a difference in context” (1989b, p. 597).

4.3.3 The Over-generation of Content

Stalnaker acknowledges that

The upshot [of Kaplan's notion of context] is that speakers and addressees never know what [metaphysical] context they are in, and for this reason, this notion of context is ill-suited for doing the pragmatic job of identifying the assertoric content of a speech act (forthcoming, p. 7).

And since he is interested in providing a pragmatic account of how assertions impact the state of information in which they occur, he avails of his epistemic notion of context to do this job. Moreover, he seems to favour the *epistemic first* construal of the relation between the two notions of context, according to which the *common ground* determines a set of centered possible worlds compatible with the propositions mutually presupposed by conversational participants.

According to Stalnaker,

The centers [of the worlds] emerge naturally from the cognitive situations of the relevant individuals; assumptions about indexical pronouns played no role in the construction [of the common ground], but given the centers it will be a simple matter to apply the Kaplan semantics for personal pronouns to members of the context set. The "I"s and "you"s are interpreted in the obvious way by who is speaking in the relevant K[aplan]-context (2014, p. 123).

However, there appear to be two issues here. First, it is not clear that applying Kaplan's framework will be a simple matter given that there is a set of possible assignments of values for the *context of use*, potentially resulting in an over-generation of contents. And secondly, it is also unclear how speakers identify the relevant *context of use* in order to interpret indexical expressions since, as we noted above, the *context of use* is inherently beyond the cognitive reach of speakers and hearers.

On the *epistemic first* construal, rather than a single assignment of values, the *common ground* determines a set of assignments of values for the *context of use* all of which are compatible with *common ground*. If this is the case, however, then Kaplan's framework will not specify a unique object as the content of an indexical, but rather a multitude, one for each compatible assignment of values. Indexicals, in this framework, "require that the value of a certain parameter be given before a determinate element of content is generated" and hence before the propositional content of sentences containing such expressions can be settled (1989b, p. 591). Provided there is more than one

assignment of values compatible with the *common ground*, the distinct values will give rise to distinct contents.

To unpack this a little, consider a speaker who knows the *common ground* of the conversation, which in this case is a set of *contexts of use* C , i.e., the set of all those quadruples of value assignments that are compatible with the *common ground*. Now, an occurrence of an indexical – an expression-*context of use* pair – specifies the content of the indexical. So relative to c_1 , the indexical has content₁, relative to c_2 it has content₂, etc. For all the speaker knows, $c_1=c_2$, but it need not, and if $c_1 \neq c_2$, then the indexical does not determine a unique content.¹⁴ Rather, relative to each *context of use* that is a member of C , the expression determines a unique content, but the speaker doesn't know which member of that set she is in (if any!). *Mutatis mutandis* for the addressee who knows the *common ground* of the conversation. Relative to the set C , where $c_1 \neq c_2$, no unique content is specified. Instead, a unique content is specified for each distinct assignment of values (e.g., as many contents for 'I' are specified as there are members of C with distinct values for the *agent* parameter, and likewise for the other parameters). In this sense, Stalnaker is right that "it will be a simple matter to apply the Kaplan semantics [...] to members of the context set." But given the potential over-generation of content, it becomes unclear how conversational participants converge on the same content with which to update the *context set* in the course of communication.

Contrary to Stalnaker's sanguine suggestion, then, it appears that the application of Kaplan's semantics on the *epistemic first* construal is not exactly a simple matter, though it is certainly straightforward once values have been assigned to the parameters of the *context of use*. What's not straightforward is which assignment of values to plug into the semantics when given a set of assignments the elements of which generate distinct contents. Likewise, while it is obvious how to leverage Kaplan's semantic framework to interpret first- and second-personal pronouns if one knows the relevant *context of use*, it remains unclear how speakers and hearers identify the relevant *context of use* in a given situation on the *epistemic first* construal according to which there is more than one *context of use* compatible with the *common ground* of that situation. While the worry with the *metaphysics first* construal is that the content – what is

¹⁴ As Stalnaker (2014) makes clear,

a C[ommon]G[round]-context in which an utterance event is presupposed to be taking place is compatible with many K[aplan]-contexts, and the information that distinguishes between the different K-contexts compatible with common ground is not presumed to be available (p. 217).

said – delivered by Kaplan’s formal framework is explanatorily idle in accounting for real-life utterance interpretation and, more generally, communication, the worry with the *epistemic first* construal is that the application of Kaplan’s formal framework over-generates content, undermining Stalnaker’s account of communication whereby the information state in which conversation occurs is updated incrementally when participants converge on (i.e., mutually accept) a determinate content (the proposition expressed by an assertion). The upshot is a need to re-examine the semantic and pragmatic notions of context and the relationship between them.

4.4 Re-evaluating the Relation Between the Two Notions of Context

4.4.1 Stalnaker’s Diagonal Proposition

Before re-evaluating the relation between the two notions of context, it might seem natural to invoke two important aspects of Stalnaker’s framework that have so far been omitted, and which might seem to address the issues so far raised. The first is one of the principles Stalnaker (1978) takes to be both motivated by his framework and justifiable as a necessary condition on rational communication:

The same proposition is expressed relative to each possible world in the context set (p. 88).

In any scenario in which there is set of assignments of values to the *context of use* the members of which generate unique contents, such as the one envisioned above where $c_1 \neq c_2$, this rule will be violated, and we have a problem. According to Stalnaker,

The problem is not that the speaker’s utterance has failed to determine a unique proposition. Assuming that one of the worlds [in the *context set*] is in fact the actual world, then that world will fix the proposition unambiguously. The problem is that since it is unknown which proposition it is that is expressed, the expression of it cannot do the job that it is supposed to do (1978, p. 90).

Indeed, as we noted, in such a case the hearer cannot update the *context set* by intersecting it with a determinate content since there are multiple, non-equivalent contents generated by an application of Kaplan’s semantics, and hence the speaker’s utterance is ineffective as such.

Stalnaker suggests “a common way of bringing utterances into conformity with the [above] principle is to interpret them to express the diagonal proposition” (1978, p. 92). The so-called diagonal proposition is the second important aspect of Stalnaker’s framework, “the one that for each world x is true in world x if and only if the proposition expressed in x is true in x ” (2004, p. 304). Such a proposition is true at a world in the context set given that the content determined at that world is true and false if the content determined at that world is false. In other words, the diagonal proposition is the same relative to each member of the *context set*, and therefore accords with the above mentioned principle. Provided O’Leary interprets Daniels’s utterance of ‘I am bald’ as asserting the diagonal proposition, then even if $c_1 \neq c_2$, the over-generation problem is solved, isn’t it?

Not quite. Stalnaker initially introduced the diagonal proposition to address special cases in which there *appeared to be a violation* of certain principles of rational communication. One such principle is the aforementioned one that the same proposition be expressed in each world in the *context set*. Another is that “[a] proposition asserted is always true in some but not all of the possible worlds in the context set” (1978, p. 88). Hence, the utterance of a necessary truth, such as ‘Water is H₂O’ on the standard analysis, is a violation of this principle – unless the *context set* includes Twin-Earth-type worlds where the substance picked out by ‘water’ has a distinct chemical composition from water. In such a special case, the utterance can be interpreted as expressing the diagonal proposition that effectively conveys that the world in which the utterance takes place is not such a Twin-Earth-type world.

In the above Daniels-O’Leary case, however, there is no obvious violation of either of these principles governing rational communication so far as the interlocutors are concerned – it’s not a special case, but a normal one. The proposition Daniels intended to assert, *that Jones is bald*, is the one O’Leary recovered and accepted as an update to the *context set* since, *ex hypothesi*, communication was successful. Moreover, there is no reason to suspect that ‘I am bald’, as uttered by Daniels, was true (or false) in all of the possible worlds in the *context set* (assume, e.g., that Daniels is wearing a toque, or that he’s talking to O’Leary on the phone). In the event that $c_1 \neq c_2$, then the first principle would be violated, but not obviously so (for O’Leary). Any such violation would have to do with a failure of transparency with respect to the presuppositions of the conversational participants given that they presuppose that $c_1 = c_2$, but it might be the case that $c_1 \neq c_2$.¹⁵ In any event, insofar as there is no obvious violation of

¹⁵ For a discussion of transparency failures as they relate to Stalnaker’s framework, see Hawthorne and Magidor (2009), Stalnaker (2009), Almotahari and Glick (2011) and Hawthorne and Magidor (2011).

rational communicative principles, there is no reason for O’Leary to interpret Daniels as expressing the diagonal proposition.

Stalnaker (2004) explicitly notes that

[d]iagonalization [is] *reinterpretation* – interpretation that [is] parasitic on the standard interpretation, which was assumed to give the right result for what was expressed and communicated in the normal case (p. 305; original emphasis).

The above Daniels-O’Leary case is meant to be a “normal case” of communication in which no principles or rational communication are obviously violated and no necessary truths or falsehoods (or presupposed propositions) are expressed by the conversational participants. Yet even in this case, as we noted, the content delivered by the “standard interpretation” – assuming it’s Kaplan’s semantics – is unavailable to the interlocutors (see s. 4.3.2). Hence, even if O’Leary ought to interpret Daniels’s utterance as expressing the diagonal proposition, he must infer this interpretation on the basis of the proposition expressed according to the standard semantic interpretation, and this is precisely what he doesn’t get assuming Kaplan’s semantics provides the standard interpretation.

Stalnaker’s strategy of diagonalization, the process of reinterpreting an utterance as expressing the diagonal proposition, is structurally similar to Grice’s account of inferring speaker meaning. In the Gricean case, when what is said violates one of the conversational maxims, the hearer is supposed to infer that what the speaker meant, as opposed to what she said, does conform to the maxims. Similarly, in the Stalnakerian case, when the content of an utterance violates the rules of rational communication, the hearer is supposed to reinterpret the utterance such that it expresses a content that accords with the rules.¹⁶ Thus, Stalnaker (2004) writes,

Reinterpreting by taking the diagonal proposition to be *the one the speaker intends to communicate* brings the statement into conformity with the rule, and seems to give the intuitively correct result (p. 305; emphasis added).

These remarks appear to suggest that, if it comes into play, the diagonal proposition is a matter of *speaker meaning* rather than *expression meaning* – that is, even if it is

¹⁶ It’s not quite true to say that in cases where a principle of rational communication appears to be violated the hearer is supposed to reinterpret the utterance in terms of diagonalization, since there are two other available kinds of reaction and none of the three is strictly speaking forced upon the hearer. Thus, Stalnaker writes, “this principle can be used in any of three ways: to interpret what is said, as a clue to what is presupposed or as a basis for evaluating the action of a speaker” (1978, p. 90). Here, we limit our attention to the first way, but importantly, the hearer needs to be tipped off that the principle needs to be applied in whichever of the three ways she deems appropriate.

what Daniels *meant* by uttering ‘I am bald’ (which is not obviously the case), it cannot be what he said.

On Stalnaker’s original proposal, the diagonal proposition comes into play in special cases, such as when necessary truths are uttered. If the above Daniels-O’Leary case is right, however, then the diagonal proposition seems to come into play in normal cases. More generally, if the *epistemic first* relation is assumed, the diagonal proposition seems to come into play in every case. Whether or not Stalnaker would welcome such a conclusion, it remains to determine what the standard interpretation of, e.g., Daniels’s utterance is, from which the diagonal proposition is derived. If the above considerations are correct, it can’t be the Kaplanian content associated with the utterance, since that content is unavailable to the conversational participants. Perhaps, then, we should consider the Kaplanian character in this role.

4.4.2 Kaplan’s Character

As noted above, Kaplan’s character is a level of meaning associated with indexical expression types that encodes their repeatable, invariant semantic properties. As such, character seems like a promising candidate for providing the basis of the standard interpretation of such expressions in Stalnaker’s framework. However, interlocutors can’t update the *context set* with an expression’s character *per se* for two reasons, one technical, and one substantive. First, the character associated with a given indexical is a function defined in terms Kaplan’s *context of use*, and not itself a proposition. For example, before yielding propositional content, a sentence such as ‘I am bald’ must first be provided with the value of the *agent* parameter of the relevant *context of use*. Until then, it cannot properly update the *context set* by way of intersection.

More importantly, however, interlocutors don’t know which possible world they inhabit, and so don’t have access to the appropriate *context of use* corresponding to their situation. When it comes to communication and interpreting the speech of others, “the contextual features on which what is said depends must, in any appropriate speech act, be presumed to be available to the addressee” (Stalnaker, 2014, p. 217). Whereas Kaplan’s character for ‘I’ yields the (actual) individual who is speaking (regardless of what anyone presupposes about said individual), Stalnaker’s framework requires that the rule associated with ‘I’ yield the individual *the interlocutors presuppose to be speaking* (regardless of who is *actually* speaking). So character, if it is to provide the standard interpretation, needs to be redefined in terms of something other than Kaplan’s *context of use*.

The obvious candidate here is the *common ground*, the information mutually presupposed by – and hence mutually presupposed to be available to – the parties to a conversation. Thus Stalnaker (2014) suggests,

to stay with the intuitive idea motivating Kaplan’s character/content semantics, we would take character to be a function from the C[ommon]G[round]-context (rather than the K[aplan]-context) to content (p. 215).

More specifically, we should redefine character as

a function whose argument is an element of the CG-context [...] and whose value is the feature in question (a world, an agent, or an addressee) (p. 215).¹⁷

Rather than a function from a *context of use* to an individual, then, character will be a function from a possible world (in the *common ground*) to an individual in that world (speaker, times, location, etc.). This definition has the result of delivering the individual the interlocutors take to be the speaker, say, rather than the actual speaker as the content of an utterance of ‘I’. The distinction is, of course, innocuous when the individual the interlocutors presuppose to be the speaker is in fact the actual speaker (e.g., $c_1 = c_2$), but the redefined character also covers cases where the interlocutors are mistaken about, or unaware of, the identity of the speaker (e.g., $c_1 \neq c_2$).

Which proposition, then, is associated with a sentence containing an indexical according to the redefined character, the proposition relevant for updating the *context set*? In the case of, e.g., ‘I am bald’, it is the proposition that is true in each world in the *common ground* in which the speaker in that world is bald, and false in each world in the *common ground* in which the speaker in that world is not bald. More generally, an indexical sentence sensitive to feature x (speaker, time, location, etc.) of the form ‘ x is F’ will express a proposition that is true in each world in the *common ground* in which x in that world is F, and false otherwise. In other words, each sentence containing an indexical will express a diagonal proposition. With our redefinition of character, then, we have a candidate standard interpretation in the form of the diagonal proposition, which can update the *context set* by way of intersection.

Stalnaker originally introduced diagonalization as a way of treating cases where the content of an utterance is, on a standard (Kaplan-style) semantics, a necessary truth

¹⁷ Stalnaker makes these remarks while discussing cases such as ‘actual’, ‘I’, and ‘you’ where Kaplan’s semantics “appeals to a feature of “context” that is not available in the common ground (such as the world of the context, or in cases where the identity of the speaker or addressee is in question, or “at issue”, the agent or addressee of the context” (p. 215). Nevertheless, it is clear that such a redefinition of character will generalize to all indexicals.

or a necessary falsehood, and hence does not eliminate worlds from the *context set*, precisely the antithesis of the purpose of assertion. Such cases are, in a sense, the result of an *under-generation* of (assertoric) content in the Stalnakerian framework. As we saw above in section 4.3.3, a related problem arises in the case of sentences containing indexicals, where a straightforward application of Kaplan's semantics to the members of the *context set* (each a distinct *context of use*) *over-generates* (Kaplanian) content. In such cases there is more than one proposition that could update the *context set*, but the audience is in no position to tell which one it should be. On the current proposal, taking the diagonal proposition as the assertoric content of the utterance ensures that a single proposition is expressed in each world of the context set, and in accord with the purpose of assertion, eliminates some, but not all, of those worlds.

Notice that on this way of understanding things, diagonalization is no longer a result of *reinterpretation*, but rather straightforward interpretation. More recently, however, Stalnaker (2014) has suggested this is the correct way to understand the content of assertions in his framework:

if we want to identify a proposition that is the assertoric content of an utterance [...] [the] diagonal proposition comes closest to what we want for the following reason: the role of assertoric content [...] is to determine which are the possibilities to be eliminated from the context set when an assertion with that content is accepted (p. 216-217).

4.4.3 Lewis's Context

By redefining the Kaplanian notion of character in terms of Stalnaker's *common ground*, we've effectively removed Kaplanian content from the picture. This is just as well, since we noted above (s. 4.3.2) that it appears to be an idle wheel in an account of utterance interpretation, and communication more generally. There I raised doubts about what role, if any, the metaphysical notion of context has to play in a pragmatic account of communication. It was initially invoked as the abstract structure in terms of which the character of indexicals were defined to generate content, but having redefined characters without making appeal to the *context of use*, it seems to have lost its natural place. In fact, all that remains from Kaplan's framework at this point is character, and even it has been redefined in order to play nice with Stalnaker's framework.

Nevertheless, it might be thought that according to the *metaphysics first* construal the *context of use* still has a role to play in constitutively determining the *common ground*, since the cognitive facts of the parties to a conversation, including what they

take to be common ground, are presumably fixed by the facts corresponding to the *context of use* of each party – even if they are ignorant of which *context of use* pertains to them. Importantly, it does not follow from the *metaphysics first* construal that speakers have *access* to the metaphysical context they are in fact a part of, which is presumably why Stalnaker takes both the *metaphysics first* and the *epistemic first* construal to be compatible construals of the relation between the two notions of context.

Nevertheless, the *context of use* is not well suited for this purpose. According to Stalnaker (2014),

K[aplan]-contexts deserve the title [i.e., “contexts”], and can play their role in explaining how content is sensitive to context, only because they determine the common ground (since it is a fact about the world in which a speech act takes place that certain information is common ground among the relevant people at the relevant time). That is, a K-context contains or determines the contextual information to which context-sensitive expressions are sensitive, since it is a representation of a whole world, plus a centre that determines the conversation in which certain information is common ground. (p. 215).

While it is true that the *context of use* can be construed as a centered possible world, it need not be centered on an instance of language use, let alone on an individual participating in a rationally cooperative communicative exchange. As Stalnaker acknowledges, “centered possible worlds, in the general case, are not suitable to be contexts, since they need not be centered on an utterance, or on a conversation” (2014, p. 215). As such, there is no guarantee that a *context of use* will determine a *common ground*.

To play the constitutive role required of context on the *metaphysics first* construal, we need a restricted class of centered possible worlds that are only centered on utterances. Lewis (1980) provides such a notion of context:

Whenever a sentence is said, it is said at some particular time, place, and world. The production of a token is located, both in physical space-time and in logical space. I call such a location a *context* (p. 85; original emphasis).

Let’s call Lewis’s notion of context the *speech context*. The set of *speech contexts* forms a subset of the set of *contexts of use*. Whereas a *context of use* represents *individuals* located in space-time, *speech contexts* represent *acts of speech* located in space-time. The difference is important since speech acts, in contrast with spatio-temporally located individuals, presumably include beliefs, intentions, etc. insofar as they are necessary, constitutive conditions of speech acts as such. And recall that Stalnaker’s

framework takes for granted “a situation that includes a speaker with certain beliefs and intentions, and some people with their own beliefs and intentions to whom the assertion is addressed” (1978, p. 78), whereas *contexts of use* do not guarantee such intentionally rich situations. The actual context/world in which language is used can only play the role of constitutively determining the *common ground* if language is actually used therein.

4.5 Conclusion

The question we have been trying to address is how to understand the relation between the metaphysical and the epistemic notions of context, both of which are prominent in the philosophy of language. Stalnaker (2014) suggests two ways of understanding the relation depending on which notion has conceptual priority, but does not discuss in detail how the relations should be understood. I have argued that neither way of understanding the relation is completely satisfactory when understood in terms of Kaplan’s *context of use* and Stalnaker’s *common ground*. In particular, the *metaphysics first* construal, which prioritizes the metaphysical over the epistemic notion of context, threatens to undermine the latter’s role in explaining the dynamics of communication on account of *content blindness*, which results from the way Kaplan defines the character of indexicals in terms of *contexts of use* and how the latter are individuated. The *epistemic first* construal, on the other hand, which prioritizes the epistemic over the metaphysical notion of context, results in an over-generation of content as a result of the straightforward application of Kaplan’s semantics to the *context set* determined by the *common ground*.

To avoid such problems, I provided an account of how the two relations can be understood in a more satisfactory way, though as with most issues worth discussing, the devil is in the details. My account depends upon the way the two notions of context, and some related ones, are specified. In particular, the metaphysical notion of context must be a *speech context*, representing a (possible) speech act, rather than a *context of use*, representing an individual at a time at a place in a world, in order to determine the common ground and make good on the *metaphysics first* construal. Furthermore, Stalnaker’s diagonal proposition is important on the *epistemic first* construal to ensure that the same proposition is expressed in each world of the *context set*. As a result, the character of indexicals needs to be redefined in terms of the *common ground* rather than the *context of use*. Once redefined, the diagonal proposition becomes the standard, rather than reinterpreted, assertoric content. What impact this redefinition has on

the broader Stalnakerian framework of communication, including reinterpretation engendered by apparent violations of the principles of rational communication, I leave to further research.

Chapter 5

Tense, Modality, and Natural Language Syntax

5.1 Introduction

Natural language encodes temporal and modal information. You can see this by considering the following sentences.

- (1) Tim cooks a meal
- (2) Tim cooked a meal
- (3) Tim can cook a meal
- (4) Tim will cook a meal

Assuming ‘Tim’ picks out the same individual in each case, (1)-(4) are closely related sentences in that they all encode information about a particular kind of event or situation involving two individuals (Tim and some meal) and a relation (cooking), but they each do so differently. (1) and (2) encode the information in temporally distinct ways: (1) indicates that the event is occurring in the present, in some sense (most likely, though not necessarily, the time of speech¹), while (2) indicates that the event occurred in the past, in some sense (prior to the time of speech and perhaps a particular such time). (3) and (4) likewise encode the information in modally distinct ways: (3) encodes the information in a way that indicates the event is possible (without

¹ In fact, that the time of speech is picked out is somewhat unlikely since it would give rise to a sports-commentary-style report on the event. Nevertheless, (1) need not refer to the speech time if the speaker is recounting a particular series of events, e.g., “We’re hanging out in the kitchen, talking. We get hungry. Tim cooks a meal. We start eating it and suddenly. . .”.

locating it temporally²), while (4) brings together temporal and modal information by indicating with certainty that the event occurs in the future (after the time of speech).

Each of (1)-(4), then, carry modal and temporal information. But how exactly do the sentences encode that information? More generally, how does natural language linguistically encode tense and modality? The latter question is the primary concern of this chapter. For the sake of clarity, it can be contrasted with a closely related, though importantly distinct question: How should we model natural language tense and modality? Like any phenomenon, the manner in which natural language carries modal and temporal information can be modeled in any number of ways depending on the interests, or theoretical questions, guiding the inquiry. As indicated in ch. 1, the guiding questions of the present inquiry reside squarely within the framework of generative grammar, whereby the object of inquiry is the language user's linguistic competence, understood as a dedicated component, or module, of the mind/brain that realizes a particular computational procedure for generating linguistic expressions (a function in intension). As such, we should model tense and modality in the way that best reflects how that information is actually represented in the structures generated by such a procedure, rather than just adopting any formal theory that can capture the pertinent information. The realist bent of the present inquiry can be brought out by asking, which formal treatment is *required* to adequately represent the way tense and modality are *in fact* linguistically encoded in natural language?

Tense and modality have been given a variety of treatments in formal semantic theories. Historically, both were treated intensionally by way of operators and index parameters (e.g., *time(s)*, *possible world(s)*). On this approach, quantifiers ranging over times and worlds appear only in the metalanguage as a way of interpreting the operators in relation to the index parameters. Further investigation led many theorists to treat tense extensionally by way of object language quantifiers and variables. On this approach, quantifiers appear explicitly in the object language and range over times, which are represented as variables in the syntax and are interpreted in relation to a metalanguage assignment function. Analysis into more complicated linguistic expressions involving multiple embeddings of modal and temporal expressions revealed the need for multiple indexing (i.e., infinite sequences of *times* and *possible worlds*) in order for the intensional approach to adequately characterize natural language tense and modality in full generality. Likewise, a fully adequate and general extensional

² I ignore the further question of what species of modality is encoded by the modal in (3), i.e., metaphysical, deontic, epistemic, dispositional or bouletic. For discussion of the different species of modality see Kratzer (1977).

approach requires the assignment function to range over infinitely many times (or possible worlds).

Whether treated intensionally or extensionally, extensive analysis of tense and modal expressions has established the fact that natural languages enjoy the full expressive power of object language quantification over times and worlds. It has therefore seemed a matter of choice to some degree whether to treat tense and modality by way of quantifiers in the metalanguage or the object language, or to adopt a mixed approach where tense, say, is treated extensionally while modality is treated intensionally, as seems to be the current orthodoxy. There are further options available as well, since neither tense nor modality necessarily needs to be treated uniformly. That is, a mixed approach could be applied to tense according to which some of the tense expressions in complex constructions involving embedded tense expressions are treated extensionally while others in the same construction are treated intensionally. The same holds in the case of modality. Nevertheless, either approach, or a mixture of the two, can in principle provide an adequate semantic analysis of tense and modality depending on one's purpose. So how should theorists decide between the different approaches?

One significant difference between intensional and extensional treatments of tense and modality (and other such expressions) is reflected in the syntactic import of each approach. The extensional approach, by invoking object language quantifiers and variables, posits additional syntactic structure not required by the intensional approach. One way of determining what is at stake in the choice between the two approaches is therefore by asking whether both are serious proposals regarding natural language syntax. Does natural language actually employ explicit quantification over times and worlds (or both)? If, for example, the extensional approach posits syntactic structure that is not supported by our best syntactic theory of constructions involving tense (and/or modal) expressions, then the extensional treatment would not be appropriate for representing the way natural language linguistically encodes tense (and/or modality). Considerations of natural language syntax, in other words, constrain the choice between intensional and extensional treatments of tense and modality.

In this chapter I critically assess some arguments that have been given both for and against intensional and extensional approaches to tense and modality in natural language. The aim is to motivate syntactic structure as a constraint on the analysis of tense and modality in natural language, and to show how such a constraint can be used to adjudicate between competing intensional and extensional treatments of the phenomena. Beyond general methodological considerations of convenience or simplicity, syntactic structure can provide a principled basis for determining which treatment, or

appropriate mix of treatments, is required for adequately representing the way tense and modality are linguistically encoded in natural language. Ultimately, then, the aim is to motivate syntactic structure as a constraint on the analysis of tense and modality in natural language, and to show how such a constraint can be used to adjudicate between competing intensional and extensional treatments of the phenomena.

The syntactic differences between the two approaches also bears on the nature of inference exhibited in natural language. In particular, whether the inferential relations holding between sentences containing tense, temporal and modal expressions (e.g., John danced yesterday. Therefore, John danced.) are a matter of form or meaning will turn on which approach is adopted. Although there will not be room to consider the issue here, it seems clear that whether such inferences are licensed by syntax or semantics depends on whether and to what extent the relevant expressions are treated intensionally or extensionally. And this, in turn, will depend on the extent to which each approach to tense and modality is supported by our best theory of natural language syntax.

For the sake of expedience, the following will be focused on tense. Although I take the considerations raised herein to apply in the case of modality as well, I leave the spelling out in detail to another day. The chapter proceeds as follows. After some preliminary remarks to further orient the discussion, I recap of some seminal historical analyses of tense and temporal expressions, which will introduce some of the key theoretical concepts as well as motivations behind various treatments of tense in natural language. I then consider three different arguments for, or against, intensional, or extensional, treatments of tense (and/or modality), arguing that none properly establishes its conclusion. Finally, I motivate syntactic structure as a constraint on the analysis of tense (and modality) in natural language and demonstrate some of its applications.

5.1.1 A Short Aside: Which Theoretical Language to Use?

Related to the question of how to model natural language tense and modality is the question of which theoretical language to use to describe the temporal and modal features of natural language expressions (e.g., Propositional Logic, First-Order Logic, (Typed-)Lambda Calculus, etc.). It is an important, and often delicate, question whether one's representational devices are adequately suited, rather than inhibitory, to the theoretical task at hand, and there's no reason to think theoretical inquiry into natural language provides an exception. Nevertheless, some view the choice of

theoretical language as rather insignificant provided it is sufficiently resourceful to characterize the linguistic phenomena in question. Thus, Ogihara (1996), writes,

a logical representational language is used only for convenience, and it should not be considered to be a “logical form” that mirrors the semantic structure of natural language. The only important issue is whether the language has enough tools to describe the target constructions in natural language (p. 28).

As hinted at above, this kind of attitude towards the description of linguistic phenomena, while not objectionable in any objective sense, is at odds with the approach advocated in this dissertation, according to which the actual semantic structure of natural language is precisely what is at issue, and what is to be made explicit by way semantic theorizing.

Of particular relevance to intensional versus extensional treatments of tense and modality in natural language is the status, and representational significance, of variables in the theoretical language used to formulate one’s theory. As suggested above, and simplifying somewhat for the purposes of this chapter, I’ll take an intensional treatment of tense (and modality) to be one wherein quantification over entities is implicit in the syntax of the object language, but explicit in the metalanguage. On such a treatment, what occur as constituents in the object language syntax are operators, such as **P**(ast), **F**(uture), **S**(ince), **U**(ntil), **N**(ow), **K**(then), \Diamond (possibly), \Box (necessarilly).³ For example, an intensional treatment of a simple past tense sentence such as (5) can be represented as in (5i).⁴

(5) Bernie admitted defeat

(5i) $\mathbf{P}[\textit{admit-defeat}'(b)]$

Likewise, I’ll take an extensional treatment of tense (and modality) to be one wherein quantification over times (and/or possibilities) is explicit in the syntax of the object language. Both quantifiers (of some sort) and variables occur as constituents in the object language, e.g.,

$$\lambda s[\dots s\dots], \exists w[\dots w\dots], \forall t[\dots t\dots]$$

where ‘*s*’, ‘*w*’ and ‘*t*’ range over situations, worlds and times, respectively. Extensional treatments of (5) can be represented as in (5e).⁵

³ See *inter alia* Carnap (1946; 1947), Prior (1957), Kripke (1963), Kamp (1968; 1971).

⁴ See Ogihara (1996) for discussion.

⁵ See Needham (1975), Dowty (1979), Kusumoto (1999), and Ninan (2010b) for discussion.

- (5e) a. $\exists t'[t' < t^* \ \& \ AT(t, \textit{admit-defeat}'(b))]$
 b. $\exists t'[t' < t^* \ \& \ \textit{admit-defeat}'(t', b)]$
 c. $t < t^* \ \& \ \textit{admit-defeat}'(t, b)$
 d. $\lambda t \exists t'[t' < t \ \& \ \textit{admit-defeat}'(t', b)]$

where ‘ t ’ and ‘ t' ’ are assigned values by a metalanguage assignment function, and ‘ t^* ’ is interpreted as an indexical (i.e., picking out the time of speech).

Textbook treatments of tense and modality are replete with variables, but opinions differ as to their theoretical import. Szabolcsi (2011), for instance, a proponent of variable-free approach to semantic theory, echoes Ogihara’s point when she notes, “the use of variables is just a matter of notational convenience” (p. 8). Similar claims can be found in the work of other variable-free theorists, e.g., Jacobsen (1999, 2015). But not all theorists agree. Chomsky (1979), for example, writes,

[a] logic with variables and a logic without variables have the same expressive power. But if logical form is derived step by step, it turns out that a logic with variables is required to express certain general principles which explain facts of language [...] [logics without variables] do not furnish the types of representation appropriate for form in the most general way [...] As far as I can see, certain significant generalizations require a classical logic containing variables, where at times the variables reflect the presence of a [covert] trace in surface structure (p. 166).

We’ll have occasion, in s. 5.3.2, to return to the (non-)issue of expressive power as it concerns tense and modality in natural language. For now, it suffices to note that the choice of theoretical language is important for capturing explanatory facts regarding language, according to some theorists, such as Chomsky. Indeed, in s. 5.4.2, the choice of theoretical language will be revealed to have some consequence depending on how we understand the relation between form and meaning in natural language, viz., the syntax-semantics interface.

5.2 Historical Analyses of Tense

A brief survey of some influential treatments of tense and temporal expressions will be useful for the sake of providing the proper historical context for the discussion that follows, but also because it demonstrates some of the limits and requirements of different kinds of intensional and extensional treatments of tense and modality.

5.2.1 Kamp (1971)

We begin with Kamp (1971), which is concerned primarily with the lexical item ‘now’ and its interaction with tense operators. Consider sentences (7) and (8).

(7) ‘A child was born that would become ruler of the world’

(8) ‘A child was born that will become ruler of the world’

(7) can easily be treated intensionally by way of Priorian operators, as in (7*i*).

(7*i*) $\mathbf{P}(\exists x) (x \text{ is born} \ \& \ \mathbf{F}(x \text{ is ruler of the world}))$

(which reads: there is a past time at which there exists an x such that x is born and there is a later time at which x is ruler of the world.) In the case of (8), however, Kamp observes, “no correct symbolization with the help of only \mathbf{P} , \mathbf{F} , and the apparatus of ordinary predicate logic is possible. [footnote omitted]” (p. 31-32).⁶

The reason for the inadequacy has to do with how the operators \mathbf{P} and \mathbf{F} are interpreted by reference to the time parameter of the index (which ranges over the totally ordered set of times). The \mathbf{P} (i.e., past) operator shifts the time parameter to a(ny) time earlier than some given time, whereas the \mathbf{F} (i.e., future) operator shifts the time parameter to a time later than some given time. Assuming that each sentence is provided with an initializing time parameter value (typically the time of speech), the operators then operate in order of linear occurrence in the sentence. Thus, assuming (8) is initialized at time t , \mathbf{P} shifts the parameter to a time $t' < t$, and then \mathbf{F} shifts the new value of the parameter t' to a time $t'' > t'$. However, such an analysis allows that $t' < t'' < t$, which is intuitively incorrect since (8) seems to require that the future time at which the child becomes the ruler of the world, t'' , be later than the time of speech, t , which is precisely the difference between the tense information contributed by ‘would’ and ‘will’ in (7) and (8).

Kamp’s fix was to introduce a ‘now’-operator, \mathbf{N} , that operates on an additional time parameter in the index which is fixed to the initialized time of the index and provides the parameter value in terms of which subsequent temporal operators are interpreted. In other words, the ‘now’-operator effectively “resets” the time parameter of the index to the initialized time (intuitively, the time of speech), such that (8) can be represented properly as in (8*i*).

(8*i*) $\mathbf{P}(\exists x) (x \text{ is born} \ \& \ \mathbf{NF}(x \text{ is ruler of the world}))$

⁶ I return to the footnote, which concerns Kamp’s motivation for adopting an intensional treatment, in s. 5.4.1.

(which reads: there is a past time at which there exists an x such that x is born and there is a time later than *now* (i.e., the time of speech) at which x is ruler of the world.) The upshot of Kamp's (1971) analysis was to demonstrate the inadequacy of an intensional treatment of natural language tense that has only a single time parameter in the index. Put otherwise, Kamp demonstrated the need for *double indexing*, the provision of two parameters of the same kind in the index, in this case two time parameters.

5.2.2 Partee (1973)

Partee's (1973) analysis of the English tense morphemes *past* and *present* has been extremely influential among semantic theorists, and is commonly cited as the genesis of an extensional, and perhaps referential, treatment of tense. In support of her analysis, Partee observes bound, anaphoric and deictic

there are uses of the tenses parallel to each of the uses of the pronouns, suggesting that the best representation of the English tenses should be structurally similar to the representation of pronouns (leaving open for the time being what form that representation should take) (p. 602).

On Partee's extensional analysis, tenses are represented by variables in the object language and pick out particular times on the timeline rather than indicating times earlier or later than a given point.

To see the similarities between tenses and pronouns, consider Partee's famous example sentence, (9), and a negation-free variant, sentence (10).

(9) I didn't turn off the stove

(10) Bernie turned off the stove

Here's what Partee says about (10):

When uttered, for instance, halfway down the turnpike, such a sentence clearly does not mean either that there exists some time in the past at which I did not turn off the stove or that there exists no time in the past at which I turned off the stove. *The sentence clearly refers to a particular time* – not a particular instant, most likely, but a definite interval whose identity is generally clear from the extra-linguistic context [...] (p. 602-603; emphasis added).

I disagree – for essentially Strawsonian reasons (see chapter 1). While I agree that (9) can be *used by a speaker to refer* to a particular time, it is not clear that (9) itself (i.e., the sentence type) refers to a particular time. Nor is it clear that we need to assume so since (9) can also be used to say that there exists some time in the past at which the speaker did not turn off the stove, or that there is no time in the past at which the speaker turned off the stove. Likewise, though (10) could be used to pick out a particular time in the past, it could also be used to say that there exists some time in the past at which Bernie turned off the stove without any particular past time being intended or picked out.⁷ Indeed, Partee concedes the point in a footnote that immediately follows the above quoted passage:

it might be possible to construct a Gricean counter-argument to this claim, and contend that the sentence asserts only that there is some time in the past at which I did not turn off the stove, with the narrowing down to relevant times explainable by conversational principles, particularly the principle of relevance [...] (p. 603, fn. 3).

Even if the referential analysis is under-motivated, the structural analogies between tenses and pronouns are compelling, and support Partee’s main claim for a parallel treatment:

If pronouns have to be treated as variables and not as sentence operators (the latter being a view I have never heard advanced or seen any evidence for), the same must be true of tenses, though not of the other elements of the auxiliary, namely modals, perfect and progressive (p. 609).

Note the conditional nature of the claim. The structural analogies suggest, or require, by Partee’s lights, that pronouns and tenses be treated in the same way. If that treatment is extensional (via variables) in the case of pronouns, then it should likewise be extensional in the case of tenses. But the requirement for a parallel treatment is entirely separable from a referential analysis of tense. Note also that Partee is not arguing for a full extensional treatment of all elements of a construction that exhibit temporal interpretive features, such as those expressive of aspect.⁸ In s. 5.3.1 I return to the structural analogies between pronouns and tense, which have recently been

⁷ Consider for example an eccentric collector of rarely used stoves who is inquiring about the previous use of a given stove. The seller might utter (10) while recounting the stove’s usage history: “Only three people have ever turned off the stove. Barack turned off the stove. Bernie turned off the stove. And Hillary turned off the stove. Donald didn’t turn off the stove.”

⁸ It is noteworthy that Partee claims ignorance of an operator-style treatment of pronouns given that five years earlier Prior (1968) offered just such a treatment.

appealed to in favour of a fully extensional treatment of tense and modality by Schaffer (2012).

5.2.3 Dowty (1982)

Dowty (1982) focuses on the interaction of tense and temporal adverbs, showing that a simple intensional treatment of both is problematic. Consider the simple sentence (11).

(11) John left yesterday

Assuming we analyze both the past tense and the temporal adverb in (11) as operators, there is an ambiguity of scope depending on the order of operators. The two possibilities can be represented as in (11a) and (11b).

(11a) **PY**[*leave'*(*j*)]

(11b) **YP**[*leave'*(*j*)]

In (11a), when the past tense operator **P** has wide scope, the sentence is true provided there is a past time such that, on the day before that time, John's leaving occurred. In the other case, (11b), where the "yesterday" operator **Y** has wide scope, the sentence is true provided there is a past time earlier than the day before a given time (intuitively, the time of speech) at which John's leaving occurred. What's problematic about such a simple intensional treatment is that both (11a) and (11b) all that John's leaving be true at times before "yesterday" and so provide the incorrect semantic analysis of the sentence, which requires that John's leaving take place on the day before the time of speech.

As Dowty notes,

One conclusion that can be drawn from this is that tense and time adverb in [(11)] [...] should not be syntactically independent elements [...] but should be introduced together, syncategorematically, by a single syntactic rule (p. 24).

Dowty (1979) offers just such a syntactic solution by introducing an **AT** operator and analyzing temporal adverbs as denoting sets of sets of intervals of times.⁹ According to that analysis, (11) is interpreted as: one of the intervals within the set of intervals comprising yesterday is an interval *i* which is earlier than *i*^{*}, and John's leaving is true at *i*, where '*i*^{*}' is an indexical referring to the time of speech.

⁹ See (5ea) in s. 5.1.1

Dowty (1982), however, provides a two-dimensional solution along the lines of Kamp (1971) according to which tenses and temporal adverbs are treated independently of one another. He describes the solution as follows.

In this system, tense operators like *past* and *present* do not shift the point in time at which a formula is evaluated [...] but in effect simply assert that the two [time] indices *i* and *j* stand in a certain relation: the past operator says that *i* is earlier than *j*, the present says that *i* is equal to *j*, and so on. Time adverbials [...] are treated syntactically as sentence operators which semantically have the effect of asserting the reference time *i* is located at a particular time, say within yesterday. Within this treatment, we can syntactically nest a tense operator within a time adverb operator, without producing the undesirable semantic effect that resulted with the Priorian nested operators in [(11)] (p. 31-32).

This analysis exploits the double indexing motivated by Kamp (1971), i.e., the two time parameters, *i* and *j* (the latter fixed to the time of speech), and goes beyond the (1979) analysis by capturing constructions with embedded temporal adverbs, multiple temporal adverbs, the deictic past tense, and embedded tenses (i.e., sequence of tense). Although Dowty (1982) acknowledges that an adequate treatment of multiple embeddings of tenses and temporal adverbs may necessitate a third time parameter, he is reluctant to endorse such a modification, viewing it as an “ad hoc and significant complication” of his analysis.

Dowty is notably explicit in assessing the import of his (1982) analysis for natural language semantics in conjunction with his Montagovian methodological approach to such matters. He writes,

formulations other than mine may turn out to be more elegant, general, of greater expressive power, or even more perspicuous when considered as independent systems of tense logic¹⁰ [...] [I am] interested in these

¹⁰ Indeed, as Dowty notes,

English tenses, according to this analysis, form quite a motley group. PAST, PRES and FUT serve to relate reference time to speech time, while WOULD and textscUSED-TO behave like Priorian operators, shifting the point of evaluation away from the reference time. HAVE also shifts the point of evaluation away from the reference time, but in a more complicated way. And FUT, in contrast to PRES and PAST, is a substitution operator, putting the reference time of its clause in the plate [sic] of the speech time of subordinate clauses (p. 53).

operators [...] only as a means for inducing an interpretation for English via translation. It is only the elegance of the empirical correctness of the model-theoretic interpretation for English that results for this translation that is my concern (p.34).

In other words, Dowty is not concerned with revealing the actual structural features that encode tense and temporal adverbial information in any particular natural language, such as English, since the object of inquiry is to interpret *translations* of English sentences in intensional logic in a way that captures the truth conditions of the original sentences.

5.2.4 Cresswell (1990)

Whereas Dowty (1982) expressed reservations about going beyond double indexing to accommodate multiple embeddings of tenses and temporal adverbs, Cresswell (1990) faced the issue head-on by analyzing sentences such as (12), in the case of tense, as well as (13), for the related case of modality.

(12) Once everyone now British who was not then miserable would be terrified

(13) If Britain had not voted to exit the EU, it would still have been possible for everyone who would then have been citizens of the EU to move to Canada

(12) and (13) are not adequately captured by a mere double indexing (of times and/or worlds) since a past time/counterfactual world, the speech time/world, and two distinct future times/possible worlds are intertwined in their meanings, which need to be kept track of in the index. Moreover, (12) and (13) are by no means special cases given that there is no upper bound on the number of tense and modal embeddings that can occur in natural language. The upshot of Cresswell's analysis was to show that the motivation for double indexing times applied equally to worlds and generalized to the infinite case, indicating the need for infinite sequences of time and possibilities to adequately capture natural language tense and modality in full generality. In other words, natural languages have the full expressive power of object language quantification over times and worlds. We return to expressive power in s. 5.3.2, where it is sharply distinguished from expressive means, since whether natural language actually employs object language quantification over times and worlds is, as Cresswell appreciated, a separate question from whether it has the expressive power of doing so.

5.2.5 Where Are We Now?

Before moving on to contemporary approaches and issues regarding the treatment of tense in natural language, let's take stock of the insights provided by these historical analyses of tense. We started with Kamp (1971), operating within a then standard intensional setting whereby tense was treated largely in terms of Priorian operators. Kamp showed the limits of an intensional treatment of tense that relied on a single time parameter in the index, demonstrating the need for double indexing, that is, an index containing more than one time parameter against which expressions are evaluated for truth. We then moved on to Partee (1973), who offered rather suggestive structural analogies between pronouns and tense morphemes in English. Given the standard extensional treatment of pronouns, Partee argued for a similar extensional treatment of tense morphemes such as *Past* and *Present* rather than the traditional Priorian intensional treatment they had received until then. Dowty (1982) was concerned with the interaction of tense and temporal adverbs, demonstrating the inadequacy of treating both intensionally by way of traditional Priorian operators and a single temporal parameter in the index. Channeling Kamp (1971), Dowty offered a double-indexed intensional treatment to address the issues he identified, foreshadowing the need for multiple-indexing that was later to be confirmed by Cresswell's (1990) in depth analysis of tense and modality.

After Cresswell (1990), we know that natural languages have the expressive power of object language quantification over times and worlds, but as we will see, that in itself does not settle whether natural language encodes tense and modality intensionally or extensionally (or both). While Dowty (1982) favoured an intensional treatment of tense and temporal adverbs, his project of offering a model-theoretic account of natural language semantics by way of translation into intensional logic was explicitly unconstrained by the syntactic structural properties of natural language expressions. Kamp (1971) also offered an intensional treatment due, in part, no doubt, to his tutelage under Richard Montague, but also in part out of a concern to be faithful to the results of generative grammar, a point to which I return in s. 5.4. Partee (1973), who occupies a prominent position within the Montagovian tradition along with Dowty, argued for an extensional treatment of tense, though her arguments have less to do with the structural properties of expressions than they do with similarities between tenses and pronouns, which have traditionally been treated extensionally. As noted above, Cresswell (1990) focuses on expressive power rather than expressive means, and does not appear to be concerned with natural language syntax. The question, then,

remains: how does natural language linguistically encode tense (and modality)? We now turn to more recent answers.

5.3 Contemporary Arguments

In principle, there seem to be several different ways in which tense and modality could be treated via intensional and extensional means. Broadly speaking, we can divide the ways into two classes, uniform and mixed. A uniform approach would treat tense and modality either (a) fully extensionally or (b) fully intensionally. There are several mixed approaches depending on whether the treatment is (i) divided along tense and modal dimensions or (ii) within tense and modal dimensions. In the case of (i), tense could be treated extensionally and modality treated intensionally or, conversely, tense could be treated intensionally and modality treated extensionally. In the case of (ii), either tense or modality (or both) could be treated both intensionally and extensionally (e.g., main clause treated extensionally, embedded clause(s) treated intensionally, or vice versa). There is, in a sense, an embarrassment of riches when it comes to possible treatments, but in what follows I'll focus on recent arguments that have been given in support of (a) in Schlenker (2006), Schaffer (2012) and Kratzer (2017), and in support of (i), modeling tense extensionally and modality intensionally, in King (2003). The arguments to be considered for (non-)uniform treatments of tense and modality are of three kinds: the argument from structural analogies, the argument from expressive power, and the argument from theoretical virtue(s). I consider each of them in turn.

5.3.1 The Argument from Structural Analogies

Schaffer (2012) offers an example of an argument from structural analogies in favor of a fully extensional treatment of tense and modality.¹¹ He writes,

[One] main argument for *Eternalism* – which traces back to Partee (1973)
– involves a range of analogies between pronouns and tense. Since pro-

¹¹ Schaffer (2012) is mainly concerned with the nature of propositions (allegedly) expressed by sentences of natural language expressions, and argues that well known arguments that support *eternalism*, the view that propositions are fully specific with respect to temporal information, and so eternally true if true at all, carry over seamlessly to support *necessitarianism*, the view that propositions are fully specific with respect to (possible) world information, and so are necessarily true if true at all. Our concern is less with the role of propositions than with the arguments provided in favour of a uniformly extensional treatment of tense and modality that appear in Schaffer's discussion.

nouns are paradigmatically referential, the analogies suggest that tense is analogously referential, specifying the time at issue. (p. 15)

To illustrate, Schaffer notes “seven characteristic features of pronominal reference” (p. 16).

PRONOUNS 1. Deictic reference: She left me

2. Anaphoric reference to a definite individual: Ann loves me, but she left me

3. Anaphoric reference to an indefinite individual: I had a wife, but she left me

4. Participate in bound reference: Every man believes that he is special

5. E-type reference: Every man who has a wife loves her

6. Strict/sloppy ellipsis: I love my wife, and you do too

7. Un-interpreted features: Only I love my wife

As Schaffer further notes, “[t]ense suggestively displays every single one of these” (p. 17).

TENSE 1. Deictic reference: Bernie admitted defeat

2. Anaphoric reference to a definite time: Hillary secured the nomination on Friday and Bernie admitted defeat

3. Anaphoric reference to an indefinite time: Cameron left sometime during the referendum tally and went to cry in his room

4. Participate in bound reference: Whenever Trump opened his mouth, Ryan cringed

5. E-type reference: Whenever Trump had a rally on a Friday, LaPierre rejoiced

6. Strict/sloppy ellipsis: Hillary thought Trump was dumb, and she still does

7. Un-interpreted features: Hillary thought Bill was faithful

Schaffer effectively takes his lead from Partee (1973) and spells out in further detail the striking analogies between various semantic features of pronouns and tenses. Both conclude that pronouns and tenses should be given parallel treatments as a result. The argument from structural analogies (**Structural Analogies**), then, appears to have the following form.

Structural Analogies

PREMISE 1: Pronouns and tenses exhibit a range of structural analogies.

LEMMA: If pronouns are analyzed as x , then tenses should be analyzed as x .

PREMISE 2: Pronouns are analyzed as x .

CONCLUSION: Tenses should be analyzed as x .

The inference from premise 1 to the lemma requires an additional premise.

HIDDEN PREMISE: Linguistic features which exhibit structural analogies should be analyzed on a par.

Before the argument can be evaluated for soundness, an analysis has to be substituted in for x . As noted above, Schaffer's preferred analysis is an extensional one on which x = referential. Another possible extensional analysis is Partee's (1973), according to which x = variables (we noted in s. 5.2.2 that this claim is separable from the claim that tenses are referential). And yet another possible analysis is an intensional one according to which x = non-referential.¹² The force of the argument from structural analogies, in terms of how to treat tense, therefore, turns on the analysis of pronouns, which is still a contentious matter.

Regardless of one's preferred analysis of pronouns, however, consider premise 1, which certainly appears to be true, as witnessed by the examples found in Partee (1973) and Schaffer (2012). Nonetheless, premise 1 is challenged by Dowty (1982), who notes a crucial disanalogy between tenses and pronouns:

pronouns in sentences where they have possible antecedents are nevertheless still always ambiguous between bound and free readings (p. 44).

For example, consider sentence (14).

- (14) Every woman thinks that she is brave
- a. [Every x : woman x] [x thinks that x is brave]
 - b. [Every x : woman x] [x thinks that y is brave]

On the bound reading, (14a), it makes a claim about an attitude that each woman bears towards herself, as represented in (14a). On the free reading, (14b), it makes a claim about an attitude that each woman bears to a particular woman, say, Hillary.

¹² See Prior (1968), who advances an intensional operator based treatment of pronouns.

Yet note, “[i]n sentences with a tense and a time adverb, on the other hand, there is never such an independent ‘free’ reading for the tense” (p. 44). Thus, consider sentence (15).

(15) Yesterday David Cameron cried

- a. [There is a time t : yesterday t] [David Cameron cry-at- t]
- b. [There is a time t : yesterday t] [David Cameron cry-at- t']

On the free reading, (15b), David Cameron’s crying is allowed to occur at a time distinct from the time designated as yesterday, but this reading is obviously unavailable. The only available reading of (15) is the bound reading, (15a), according to which David Cameron’s crying occurred during the time designated by yesterday.

Partee (1984) also expresses reservations about her earlier structural case for treating tense extensionally and, hence, premise 1 of **Structural Analogies**. She writes,

Treating pronouns as variables has some plausibility and a considerable tradition; but ‘reference time’, which appears to lie at the heart of temporal anaphora, does not correspond uniformly to any single constituent of the sentence, so there does not seem to be any reasonable way to introduce it systematically in a direct model-theoretic interpretation of the syntax. (p. 266)

Note the sensitivity to syntactic considerations, in particular the semantic properties of syntactic constituents, which undercuts the *structural* part of the alleged analogy. Partee notes further that Partee (1973)

suffered from two inadequacies: (i) the lack of a unified treatment of pronominal anaphora, which did not become available until the work of Kamp and Heim; and (ii) the claim that tenses themselves acted like pronouns and the consequent belief that *they therefore had to correspond to explicit time variables in a logical representation* [...] Temporal anaphora is more subtle [than nominal anaphora] because of the categorical variety of the expressions involved – tenses, adverbs, adverbial clauses, and main clauses (including the aspectual classification of the clauses themselves into event-like and state-like) (p. 275; emphasis added).

Here again, Partee invokes syntactic differences between pronouns, which all belong to the same category, and tense and temporal expressions, which belong to a number of distinct categories. Thus, even though the analogies highlighted by Schaffer are

suggestive, they are not necessarily structural, that is, having to do with syntactic constituents and their structural relations, and so Premise 1 of **Structural Analogies** is not obviously true. And without premise 1, the hidden premise does not come into effect and the argument collapses.¹³

5.3.2 The Argument from Expressive Power

Schaffer (2012) also provides an example of an argument from expressive power in favour of a fully extensional treatment of tense and modality:

[Another] main argument for *Eternalism* – which has roots in Kamp (1971) arguments for double time-indexing [...] is based on the fact that natural language has the expressive power of a system with explicit time variables. Treating natural language as actually having explicit time variables is then said to be the best explanation for it having exactly such expressive power (p. 21).

Another example of such an argument, focusing on modality, can be found in Kratzer (2016) in discussion of the move to extensional treatments of tense:

Cresswell 1990 presented parallel arguments for modal anaphora, and showed more generally that natural languages have the full expressive power of object language quantification over worlds and times. Quantification over worlds or times is this no different from quantification over individuals, and should be accounted for in the same way. [...] Since natural languages have syntactically represented individual variables and it would be surprising if they used two different equally powerful quantification mechanisms, it seems to be at least a good bet that there are syntactically represented situation variables in natural languages (section 5).

In s. 5.2.1 we saw Kamp's (1971) argument for double indexing, and in s. 5.2.4 we noted Cresswell's (1990) arguments generalizing Kamp's results and revealing the extent of the expressive power of natural languages with respect to tense and modality.

The argument from expressive power (**Expressive Power**) goes as follows.

¹³ Quite apart from the status of premise 1, it's not obvious that the hidden premise itself is true. Even if pronouns and tenses do exhibit a range of analogies, it does not immediately follow that they should be treated the same. Perhaps, for example, the apparent analogies are like similar symptoms of fundamentally distinct diseases.

Expressive Power

PREMISE 1: Natural language exhibits the full expressive power of object language quantification over times and possibilities.

PREMISE 2: The best explanation of why natural language exhibits the full expressive power of object language quantification over times and possibilities is that natural language actually quantifies over times and possibilities.

CONCLUSION: Natural language actually quantifies over times and possibilities.

Premise 1, of course, was proven to be true by Cresswell (1990). So the main thrust of **Expressive Power** comes from premise 2.

Schaffer's reasoning seems to be that the best way to model the expressive power of natural language is by positing explicit time variables in the syntactic structure of expressions. King (2003) agrees:

If the complex temporal facts present in natural language are most readily and easily represented by viewing tenses as involving explicit quantification over time and as expressing relations between times, that is a good reason for thinking that tenses really work this way. (p. 218)

King's appeal to how temporal aspects of expressions are represented and how to "view" tense will be addressed in more detail in s. 5.3.3. For now I'll just note that it's not clear that the best way to model a phenomenon provides good reason for believing the phenomenon to "really work this way".¹⁴ As noted above, there are many different ways to model any given phenomenon depending on the interests and questions guiding the theoretical inquiry, and the question of realism goes much beyond the case of modeling. Recall that Dowty (1982) developed an effective (intensional) way to model the semantic interaction of tenses and temporal adverbs without pretending to lay any claim to the actual structure of the natural language expressions he was modeling.

Kratzer, on the other hand, provides a more interesting reason for supposing that tense and modality are encoded extensionally on account of considerations of expressive power. Her reasoning seems to be that explicit quantification over individuals is achieved by way of syntactically realized variables, and so explicit quantification over

¹⁴ It's also worth pointing out that this quote comes directly after King discusses Ogihara's (1996) extensional treatment of tense. And yet, as noted in s. 5.1.1, and as King acknowledges, Ogihara explicitly disavows construing his treatment as revealing the expressive means of natural language constructions, since he views his project along the Montagovian lines of Dowty (1982).

times and possibilities probably is too. Indeed, it would be surprising for distinct but equally expressive quantificational systems to occur in natural language. Schaffer (2012) also echoes this point, citing Schlenker (2006) in support. Schaffer writes,

one should keep in mind what Schlenker [...] calls the “pervasive symmetry” between the system of reference to individuals, worlds, and times, as seen in types of reference and expressive power [...] Given such a pervasive symmetry I think it is perverse to have an extensional treatment of individual reference but insist on an entirely different kind of formal apparatus for worlds or times. Surely a symmetric formalism ought to be at least the default view (p. 28).

The main problem with this line of reasoning is evidently that it collapses into **Structural Analogies**. Both Kratzer and Schaffer take for granted that quantification over individuals is to be treated extensionally, and then argue that the same should hold for quantification over times and worlds – indeed, that it would be “surprising” or “perverse” if this was not the case. I’ve already addressed the argument from structural analogies in s. 5.3.1. I would add that it remains an empirical question whether or not two equally expressive quantificational systems are realized via the same mechanisms in natural languages, and that it would not be perverse if we had good independent reason (e.g., on the basis of syntactic considerations) to believe that different mechanisms were realized in each case. *Pace* Schaffer, I would suggest that, as an empirical matter, the default in the case of natural language tense and modality should be no presumption of either a uniform or mixed distribution of intensional and extensional elements.

Perhaps the most important point against **Expressive Power** is that expressive power is a red herring when it comes to how tense and modality are encoded in natural language expressions. King (2003) correctly observes that “the issue [of extensional versus intensional treatments of tense] is not one of expressive power” since “relative expressive power alone does not seem to tell us whether tenses can be treated as operators or e.g. *must* [be] understood as object language quantifiers over time” (p. 219-220). The results of Cresswell (1990) concerning the expressive power of natural languages are important and fascinating in their own right. But nothing about the *expressive means* of natural language follows from the fact that it possesses the *expressive power* of object language quantification over times and possibilities since such power can be realized in a variety of ways.

5.3.3 The Argument from Theoretical Virtue(s)

The third, and last, argument to be considered is the argument from theoretical virtue(s). King (2003) offers an example of such an argument in support of an extensional treatment of tense (though he defends an intensional treatment of modality). According to King,

treating tenses as e.g. involving quantification over times (and expressing relations between times) rather than index shifting operators (i) allows for a simpler, more elegant and less ad hoc treatment of tenses and temporal expressions than does an operator treatment; and (ii) allows for a more plausible account of the relation between the surface structures of English sentences and the syntactic representations of those sentences at the level of syntax that is the input to semantics (which I shall call LF) (p. 221).

I'll consider (i) and (ii) in turn, arguing that the latter is on the right track pending an appropriate understanding of LF.

Schaffer (2012) agrees with (i), writing, “*Eternalism* – while not logically mandatory – is still simpler, more elegant, and less ad hoc” (p. 22). Eternalism is not required since it is an empirical matter whether natural language syntax realizes the constituents imputed by an extensional treatment of tense. Schaffer (2012) is clear on this point:

it is of course an empirical question whether natural language has the structure of intensional logic, or rather the structure of a fully extensional system with explicit world and time variables. (p. 13)

King also appears to be aware of the empirical nature of the manner in which natural language encodes temporal information, but appears confused about how to construe extant treatments. King (2003) notes,

It is important to be clear at the outset that the claim that tenses are operators that shift features of the index of evaluation is an empirical claim about natural language. It is a claim to the effect that in the best syntax and semantics for natural language, tenses will be treated syntactically and semantically as operators. (p. 215)

King is correct, but only if the theorist putting forth the claim that tenses are operators *intends* it to be an empirical claim about natural language syntax. It is important to be clear at all times – not just at the outset – that not all theorists are engaged in a unified project with the same theoretical objectives. As we say with Dowty (1982),

not all theorists who treat tense intensionally purport to be making empirical claims about natural language syntax. Likewise in the case of Ogiwara's (1996) extensional treatment of tense. Some theorists are *merely modeling* empirical phenomena.

Simplicity and elegance are certainly virtues of a theory, rather than vices. Schlenker (2006) provides a potential example in the case of how to define truth in a uniform extensional treatment of times, worlds and individuals. Schlenker notes that such a treatment will have to relativize truth to three sequences, one for each of worlds, times and individuals, as follows.

- a. $\exists w_i \phi$ is true at s^w, s^t, s^x iff for some possible world d , ϕ is true at $s^w [w_i \rightarrow d], s^t, s^x$
- b. $\exists t_i \phi$ is true at s^w, s^t, s^x iff for some moment d , ϕ is true at $s^w, s^t [t_i \rightarrow d], s^x$
- c. $\exists x_i \phi$ is true at s^w, s^t, s^x iff for some individual d , ϕ is true at $s^w, s^t, s^x [x_i \rightarrow d]$
- d. If P is a predicate taking k world arguments, m time arguments and n individual arguments, ($k, m, n \geq 0$), $P w_{r1} \dots w_{rk} t_{s1} \dots t_{sm} x_{t1} \dots x_{tn}$ is true at s^w, s^t, s^x iff $s^w(w_{r1}), \dots, s^w(w_{rk}), s^t(t_{s1}), \dots, s^t(t_{sm}), s^x(x_{t1}), \dots, s^x(x_{tn})$ (in that order) satisfy the interpretation of P (p. 509).

Schlenker notes further that (a-d) can be replaced by a single definition, as in (e).

- e. For each $\xi \in \{x, t, w\}$, $\exists \xi_i \phi$ is true at s iff for some d in D^ξ , ϕ is true at $s[\xi_i \rightarrow d]$

Replacing three definitions for truth with one is certainly a simplification of the theory, and arguably a more elegant treatment, and perhaps this is the kind of thing King and Schaffer have in mind.

On the other hand, Schlenker provides another potential example of the virtues in a uniformly intensional framework, specifically to deal with quantifier domain restriction. The truth definition for quantification over individuals could be as follows.

- f. *Someone* ϕ is true at w, t, x iff for some individual x' satisfying $x r x'$, ϕ is true at w, t, x'

[where] r is a relation encoding 'relevance': $x r x'$ is intended, rather vaguely, to mean that x' is relevant to x (p. 509)

Schlenker observes,

The [intensional] solution [i.e., (f)] was elegant in that it did not require a complex syntax (since domain restrictions were entirely treated in the meta-language). By contrast, in a symmetric [i.e. uniform] extensional alternative, the implicit restrictions must be made explicit, yielding representations such as $[\forall x_1: \textit{person}(x_1) \ \& \ D(x_1)] \textit{fine}(x_1)$, where D is the restriction on the domain of quantification (p. 514).¹⁵

So simplicity and elegance appear to cut both ways, in favor of either an intensional or an extensional treatment. It's less clear what King and Schaffer's ad hoc charge amounts to, though perhaps they have in mind what Kratzer (2016) thought of as a surprisingly distinct, though equally expressive, system of quantification in the case of tense and modality from that of quantification over individuals. As noted, however, this claim reduces to **Structural Analogies**, which was dispatched in s. 5.3.1.

More generally, however, simplicity is a problematic criterion of theory choice since it seems to reveal more about the theorist than the object of theory. Discussing the issue in the context of theoretical linguistics, Ludlow (2011) argues,

simplicity is not a genuine property of the object of investigation (whether construed as the human language faculty or something else), but is rather a property that is entirely relative to the investigator, and turns on the kinds of elements that the investigator finds perspicuous and “user friendly” (p. 153).

Additionally, as Ludlow notes, while *intra*-theoretical evaluations of simplicity and elegance appear to be available (e.g., Schlenker's example (a-e) above), *inter*-theoretical evaluations are not straightforward “since across theories there is no neutral way of defining theoretical machinery, or measuring its relative complexity” (p. 156). Even if an extensional treatment does, in some objective sense, allow for “a simpler, more elegant and less ad hoc treatment of tenses and temporal expressions than does an operator treatment,” such virtues alone could not justify the claim that natural language so encodes tense and temporal information.

As noted above, besides (i), King also thinks an extensional treatment of tense

¹⁵ Schlenker observes further, “it could certainly be argued that $D(x_1)$ is syntactically real – after all, contemporary syntax is rife with elements that are unpronounced but are nevertheless believed to have syntactic existence” (p. 514). (For more on covert elements, see s. 5.4.1 below as well as ch. 2 above.) However, against such a treatment, Schlenker notes, “if domain restrictions are treated explicitly, variables are bound to proliferate. In the general case any number of variables may be necessary to determine the value of a particular domain restriction” (p. 515). Schlenker's discussion suggests, and I tend to agree, that syntax will likely not bear the burden of such variable proliferation.

(ii) allows for a more plausible account of the relation between the surface structures of English sentences and the syntactic representations of those sentences at the level of syntax that is the input to semantics (which I shall call LF).

Here, I think, King is on the right track towards the kind of consideration that can help adjudicate between intensional and extensional treatments of tense and modality in natural languages, namely, coherence with syntactic structure. That is, with respect to a given analysis of tense or modality (ii) can help answer the question, why this semantic representation rather than some other(s)? We've seen a few kinds of answers to this type of question that are less than satisfactory: uniformity with other analyses (Partee (1973), Schaffer, Schlenker), convenience/preference/perspicacity (Ogihara, Dowty), and simplicity/elegance (King, Kratzer, Schaffer). With (ii) we get a potentially more satisfying answer, namely, there's independent syntactic reason to believe the structure of the expression has these particular constituents related in this particular way, and this interpretation of the structure (rather than some other) captures the intuitive meaning of the expression. This kind of consideration can have bite since, as mentioned in s. 5.1.1, the extensional approach, by invoking object language quantifiers and variables, posits additional syntactic structure not required by the intensional approach. One way of determining what is at stake in the choice between the two approaches is therefore by asking whether both are serious proposals regarding natural language syntax.

5.4 Syntactic Structures

5.4.1 Logical Form

King's claim in (ii) about the proper account of the relation between form and meaning turns on how we understand LF (an abbreviation for logical form). Unsurprisingly, not all theorists understand LF the same way. Dowty (1982), for example, prefiguring King (2003), identifies himself as one of those theorists

striving toward analyses which make the logical form of a sentence as close to the apparent surface syntactic form as possible. By 'logical form' I of course don't mean the translation of an English sentence into intensional logic, much less do I mean 'logical form' as is currently understood in the Extended Standard Theory. Rather, 'logical form' is simply *that syntactic*

analysis of a sentence upon which compositional semantic interpretations is directly based, i.e., the analysis tree of a sentence (p. 28; original emphasis).¹⁶

Since a given set of expressions, such as the sentences of English, can be generated by any number of recursive syntactic rules, which are in this sense extensionally equivalent (or share a weak generative capacity in Chomsky's sense), there is no *privileged* syntactic analysis over which a compositional semantic interpretation can be defined. Rather, any appropriate syntactic analysis will do the trick, though Dowty does note a preference for those that cleave closer to surface structure, which leads him, unlike King, to an intensional treatment of tense. Regardless, no question about the exact means by which natural language encodes tense and modality arises on this conception of LF.

Contrast this with understanding of LF that implicit in Kamp (1971). In s. 5.2.1 I alluded to a footnote accompanying Kamp's double-indexed intensional analysis of (8).

(8) A child was born that will become ruler of the world

That footnote reads as follows.

I of course exclude the possibility of symbolizing the sentence by means of explicit quantification over moments. Such a symbolization of [(8)] would certainly be possible; and it would even make the operators P and F superfluous. Such symbolizations, however, are *a considerable departure from the actual form of the original sentences which they represent* – which is unsatisfactory if we want to gain insight into the semantics of English. Moreover, one can object to symbolizations involving quantification over such abstract objects as moments, if these objects are not explicitly mentioned in the sentences that are to be symbolized (fn. 1; emphasis added).

Kamp (personal communication) confirms that, unlike Dowty, he had the LF of generative grammar in mind when he wrote about “the actual form of the original sentences.” More generally, Kamp's remarks reveal a method of theorizing that takes the deliverances of contemporary syntactic theory as a constraint on semantic analysis. However, Kamp's talk of what is “explicitly mentioned in the sentences,” on the one hand, and the “actual form of the original expression,” on the other, leaves it somewhat unclear whether surface structure or some other level of syntactic representation is the appropriate constraint on semantic analysis.

¹⁶ Extended Standard Theory was the 1970s iteration of generative grammar, beginning with Chomsky (1973).

Although some theorists are primarily concerned with adhering to surface form/structure, it's not immediately clear why this should be thought of as a significant level of representation that needs to be respected or preserved. In particular, if “surface structure” just refers to the conventional orthographic representation of linguistic expressions in, e.g., the English alphabet, it has no obvious claim to privileged status vis-à-vis theoretical inquiry into natural language. In the first instance, linguistic competence is acquired reflexively, with little or no explicit instruction whereas the ability to read and write in accord with (local) orthographic conventions requires explicit instruction, but is in no sense necessary for competence with a language. There are many illiterate people in the world, but no one would suggest, on that count, that they lack competence with their language. Theoretical inquiry into linguistic competence, then, is strictly speaking independent of orthography.

Additionally, an alphabet, the orthographic system of a given language, is evidently just a folk linguistic division of the continuous sound wave that accompanies speech into discrete units that are meant to represent distinct sounds therein. This is a rather crude representation, however, given that a single letter can carry the weight of more than one sound.¹⁷ As such, conventional orthographic representation is not necessarily revelatory of anything besides the primitive conception of language it reflects. But once we see that the “surface structure” is, in this sense, arbitrary, there is no obvious reason to privilege it above other levels of representation of expressions, each of which is a theoretical posit and needs to be justified accordingly.

In any event, setting aside the theoretical import of “surface structure”, the pertinent level of representation in (ii) is LF, which is also the interface level between syntax and semantics posited in generative grammar. The simplest way of articulating the concept of LF, as it is understood in generative grammar, is the following.

LOGICAL FORM

LF is the level of linguistic representation at which all grammatical structure relevant to semantic interpretation is provided.¹⁸

In other words, whatever interpretable constituents are present in an expression of natural language are found at LF.

Within the minimalist program, the current iteration of generative grammar, two conditions hold that are important for how to understand LF, *full interpretation*

¹⁷ For example, the ‘t’ in North American English corresponds to the so-called plain ‘t’, as in ‘sty’, the aspirated ‘t’, as in ‘tie’, as well as a flap, as in ‘butter’, and a glottal stop, as in ‘cat’. See Isac and Reiss (2008) s. 6.3 for discussion.

¹⁸ Hornstein (1995), p. 3

and *inclusiveness*. *Full interpretation* is a general condition of all levels of linguistic representation that “there are no superfluous symbols in representations” (Chomsky (1995), p. 24). When applied to LF, *full interpretation* “entails that every element of the representation have a (language-independent) interpretation” (ibid., p. 24). So LF provides all structural information relevant to semantic interpretation, and every bit of that structural information is given a semantic interpretation, there are no redundant constituents.¹⁹ *Inclusiveness* is a condition applying to the computational procedure that gives rise to complex expressions: “no new objects are added in the course of computation apart from rearrangements of lexical properties (in particular, no indices...)” (p. 209). In terms of LF, *inclusiveness* amounts to the constraint that all constituents of LF derive from the lexicon.

The burden of the extensional treatment of tense (and modality), then, is to demonstrate that the structures underwriting its analysis cohere with the syntactic structures posited by syntactic theory. In particular, to be a serious proposal regarding natural language syntax, the extensional theorist will have to motivate the presence of the constituents it posits, such as variables, at LF. As Collins (2007) notes, “an item of syntax must be such that it is (i) merged and (ii) carries un/interpretable features to which the derivation is sensitive” (p. 840). In other words, each posited syntactic constituent needs to be specified with respect to its category and features, the latter of which determine which other lexical items it can merge with and which interpretive dependencies it can instantiate (since movement is driven by morphological feature checking).²⁰ Additionally, each posited item must be an element of the lexicon (the only way to enter into a syntactic derivation). Extensional treatments of tense that posit covert syntactic items in the service of semantic analyses without specifying these syntactic details are really only halfway proposals, not yet serious syntactic proposals, not yet complete proposals for how to tense (and modality) is encoded in natural language.

Particularly difficult, in this regard, will be the status of variables, since it’s not clear, on the traditional logical conception of variables as entities that are inherently free or bound, that variables are to be found in syntax. Chomsky (1981), for example, provides the following definition of a variable in his syntactic theory: “ α is a variable if and only if $\alpha = [_{NP} e]$ in S bound by an operator [...] [we] understand operators to

¹⁹ Chomsky adds, “[t]here can, for example, be no true expletives, or vacuous quantifiers, at the LF level” (p. 24).

²⁰ Cf. Chomsky (1995) p. 210: “A core property of C_{HL} [the computational component of the language faculty] is feature checking, the operation that drives movement under the Last Resort condition.”

include quantifiers, wh-phrases, or a binding NP in COMP; or definite or indefinite operators as in relative clauses” (p. 102). More recently, in terms of minimalism, Chomsky (1995) writes, “FI [*full interpretation*] at LF includes the property of *strong binding*: every variable must have its range fixed by a restricted quantifier, or have its value determined by an antecedent” (p. 51). This conception of variables is consistent with the extensional approach at least insofar as the variables are bound by an operator of some sort, but it leaves no room for “free” variables, as a referential analysis would contend for so-called deictic cases of tense (see ss. 5.2.2 and 5.3.1 above). In other words, only bound variables appear to be present in syntax, marking interpretive dependencies between syntactic constituents (i.e., operators and variables), not the logician’s variables.²¹ Additionally, operators move during the course of syntactic derivations of complex expressions, and as such they are subject to constraints on movement more generally (e.g., no extraction out of subjects, out of relative clauses, etc.), leave a trace (i.e., a bound variable), and have a determinate category.

5.4.2 Direction of Explanation

Even if it is agreed that LF is the level at which all structural properties relevant to meaning are encoded, there remains an issue about the direction of explanation, or analysis with respect to the syntax-semantics interface. Do we (a) start with an intuitive understanding of the meaning of expressions, coupled with theoretical constraints on what those meanings could be (e.g., truth-conditional content) and then “reverse engineer” to get to the LF needed to support such meanings? Or do we (b) start with syntactic descriptions of expressions and how they’re constructed, and then offer an interpretation of whatever constituents emerge, with their given structural configurations, as provided by LF? Both options give rise to potential complications for theorizing.

²¹ Cresswell (1990) appreciated this:

For my purpose is to shew that the facts of natural language are such that if we begin with a possible worlds semantics for it at all, then we must have one which has the power of quantification over worlds. Perhaps some will say that even if \mathfrak{L}^* has the power of quantification over worlds yet it still does not quantify over worlds, because it does not actually have world variables. My reply to that is simple. If possession of variables is a syntactic matter then it is doubtful that natural language quantification has variables in any interesting sense even if pronouns have sometimes been thought to be such. If it is not a syntactic matter then I am unsure what other criterion can be given than expressive power? (p. 61).

With option (a), the structure of an expression is derived from the meaning of the expression, that is, *syntactic form follows interpretation*. In this case, the choice of formal system for representing meanings becomes rather important, since the representational devices of the chosen formal system will shape the ensuing analysis (see s. 5.1.1). Additionally, strong independent motivation needs to be provided for the theoretical constraint(s) on what constitutes the meaning of an expression, the decision about what kinds of things meanings are (e.g., propositions, assertability conditions, inferential relations, etc.).

With option (b) the meaning of the expression is derived from its structure, that is, *interpretation follows syntactic form*. In this case, we might wonder if our grasp of syntactic form is better, or more properly grounded or motivated, than our grasp of semantic interpretation. Additionally, we need strong independent motivation for the syntactic description of expressions, the decision about what kinds of things syntactic structures are).

To take syntax seriously as a constraint on semantic theorizing, I contend, is to follow option (b), which has implications that can help decide between intensional and extensional treatments of tense (and modality). Collins (2007) note one such implication: “[a]nything occurring in the syntax must enter into syntactic relations, not just semantic ones” (p. 838). In other words, a posited covert element, such as a quantifier or variable, must include an account of that elements derivational history resulting in its position at LF, as Collins explains:

It is one thing to say where the complex should occur, it is quite another thing to say how it arrives in that position. Without an explanation of the origins of the complex, the structure is effectively unconstrained by syntax. The problem for the proposal is that, derivationally, the complex has no place in LF structure: it is parachuted in from semantics. This essential syntactic constraint will be missed if LF is construed as a representation of properties of a sentence, rather than as the output of a derivational process (p. 842).

When it comes to syntactic constituents, it might be said, it’s not where you’re at so much as where you’re from.

One benefit of imposing syntactic constraints on semantic theorizing is, as Collins notes, “current syntactic theory is not in the business of providing structures that answer to philosophical conceptions of propositions” (p. 810). Beyond general methodological considerations of convenience or simplicity, or antecedent semantic commitments vis-à-vis the nature of content, the resources of contemporary syntactic theory can provide

a principled basis for determining which treatment or appropriate mix of treatments, is required for adequately representing the way tense and modality are linguistically encoded in natural language. The point can also be put in terms of theoretical virtues, namely, a semantic theory that coheres with syntax is, all things considered, better than one that is at odds with it.²²

5.4.3 Applications of the Syntactic Constraint

To concluding, I'd like to look at some examples of applications of the syntactic constraint I've been motivating in this chapter that demonstrate how syntax can constrain semantic theorizing. Kusomoto (2005), for example, defends a limited extensional treatment of tense, according to which

all predicates, whether they are verbs, nouns, or adjectives, have a time argument, but not all time arguments are represented in the syntactic structure as time variables [...] the time argument of the main predicate of a clause is represented in syntax, but not the time arguments of predicates in argument positions and modifiers. (p. 320).

In support of his analysis, Kusomoto presents a range of evidence suggesting that “the eventuality times of nouns in the argument position and of noun-modifying participles should not be accessible in the same way as those of the main predicate clauses” (p.354).

Kusomoto argues against an intensional treatment by considering certain constructions that exhibit so-called *later-than-matrix interpretations*, such as (16) and (17).

(16) Samantha married a man who destroyed the EU and the UK

²² Once we take syntax seriously as a constraint on semantic theorizing, temporal and modal expressions begin to look a bit different than from the traditional perspective of semantics. Tense, for example, is primarily marked morphologically – e.g., ‘admitted’/‘admits’/‘admitting’, ‘voted’/‘votes’/‘voting’ – or via auxiliaries – ‘will admit/vote’, ‘did admit/vote’ – or both – ‘is admitting/voting’, ‘was admitting/voting’. Temporal expressions, more generally, occupy the categories of adverbs – ‘sometimes’, ‘always’, ‘once’, ‘yesterday’ – adjectives – ‘early’, ‘late’ – and nouns – ‘today’, ‘moment’. Meanwhile, modal expressions appear primarily as auxiliary verbs – ‘might’/‘must’/‘may’, ‘can’/‘could’/‘cannot’, ‘will’/‘would’ – but also as adjectives – ‘necessary’, ‘possibly’ – and adverbs – ‘necessarily’, ‘possibly’. Thus, what semanticists tend to classify together as modals, tense and temporal expressions are a motley crew from the perspective of syntax, which includes detailed theories about morphology, auxiliaries and adverbial and adjectival modification. Accordingly, we need some additional assumption in the background for treating these expressions in a uniform manner, since, *prima facie*, the distinct categories are good reason to believe the expressions have distinct functions in natural language and should not necessarily be treated analogously.

- (17) I tried not to hire anybody who put on a terrible performance
(Kusumoto's example)

(16) and (17) are so-called because the relative clause in each is interpreted as describing an event occurring after the time at which the matrix clause is interpreted. That is, Samantha married a man who *later* destroyed the EU and the UK, and the speaker tried not to hire anybody who *later went on to* put on a terrible performance. On a standard intensional analysis, using Priorian operators, (16) and (17) would be represented as follows.

- (16i) [a man who_i[_{TP} PAST [_{VP} x_i destroyed the EU and the UK]]]_j [_{TP} PAST Samantha marry x_j]
(17i) [anybody who_i[_{TP} PAST [_{VP} x_i put on a terrible performance]]]_j [_{TP} PAST I try not to hire x_j]

In both cases, the later-than-matrix reading is obtained via movement operations that remove the relative clause material from the scope of the matrix past tense operator.

This works fine for (16), but the case of (17) is different since it contains a negative polarity item (NPI) 'anybody' that must be syntactically licensed by a c-commanding item, in this case 'not'. On the scope analysis, the NPI in (17) is no longer licensed, and so the later-than-matrix interpretation is predicted to be ungrammatical, which is manifestly incorrect. As such, a simple intensional treatment of such constructions is inadequate given independently motivated syntactic constraints on the distribution of NPIs.

Glanzberg (2011) offers another example of how syntax can constrain semantic theorizing about tense. In particular, Glanzberg challenges the thesis of *sententiality*, according to which tense is construed intensionally as a sentence operator (ES), i.e. an operator, E, that maps a sentence, S, to another sentence, S'. Unlike ES, Glanzberg notes, syntax gives us structures like the following.

[_{TP} Tense plus... [_{VP} predicate and arguments]]

But "tense is not a sentential operator in any way that could support sententiality" since "T is not an operator position [...] it creates a new syntactic unit, rather than mapping a syntactic unit to another of the same type", and "the embedded constituent [...] is not sentence-like" (p. 118). Thus, "we do not have any thing like an operator E, and what we do have does not apply to anything like a sentence S" (p. 118). As such, even if we have reason to go for an intensional treatment in the case of tense, it

won't do to use traditional Priorian sentence-level operators because the syntax does not provide the kind of structure to support such operators.

Kusumoto and Glanzberg both illustrate how syntactic considerations can be fruitfully brought to bear on semantic analyses of tense, demonstrating that syntactic structure can provide a principled basis for adjudicating between extensional and intensional treatments of tense (and modality) in natural language. To be sure, much more could be said about how temporal and modal information is encoded in natural language. More research along the syntax-semantics interface is needed to help decide what should be said.

References

- Åkerman, Jonas (2009). A Plea for Pragmatics. *Synthese* 170 (1):155-167.
- Åkerman, Jonas (2015). The Communication Desideratum and Theories of Indexical Reference. *Mind & Language* 30 (4):474-499.
- Åkerman, Jonas and Greenough, Patrick (2010). Vagueness and Non-Indexical Contextualism. In Sawyer, Sarah (Ed.), *New Waves in Philosophy of Language*, New York: Palmgrave Macmillan: 8-23.
- Almotahari, Mahrad and Glick, Ephraim (2010). Context, Content and Epistemic Transparency. *Mind* 119 (476): 1067-1086.
- Anand, Pranav and Nevins, Andrew (2004). Shifty Operators in Changing Contexts. In Young, R. (Ed.), *SALT XIV*: 20-37.
- Antony, Louise M. (2003). Rabbit-Pots and Supernovas: On the Relevance of Psychological Data to Linguistic Theory. In Barber, Alex (Ed.), *Epistemology of Language*. Oxford: Oxford University Press: 47-68.
- Bach, Kent (1992). Intentions and Demonstrations. *Analysis* 52 (3): 140-146.
- Bach, Kent (1994). Conversational Implicature. *Mind & Language* 9 (2): 124-162.
- Bach, Kent (2000). Quantification, Qualification and Context: A Reply to Stanley and Szabó. *Mind & Language* 15 (2-3): 262-283.
- Bach, Kent (2001). You Don't Say? *Synthese* 128 (1-2):15-44.
- Bach, Kent (2005). Context ex Machina. In Szabó, Zoltán Gendler (ed.), *Semantics Versus Pragmatics*. Oxford: Oxford University Press 15-44.
- Bach, Kent (2006). The Excluded Middle: Semantic Minimalism Without Minimal Propositions. *Philosophy and Phenomenological Research* 73 (2): 435-442.
- Bach, Kent (2012). Context Dependence. In Manuel Garcia-Carpintero and Max Kolbel (eds.), *The Continuum Companion to the Philosophy of Language*. New York: Continuum International Publishing Group.
- Ball, Derek (2017). What Are We Doing When We Theorize About Context Sensitivity? In Jenkins Ichikawa, Jonathan (Ed.), *The Routledge Handbook of*

- Epistemic Contextualism*, New York: Routledge, 105-118.
- Ball, Derek and Rabern, Brian (Eds.) (forthcoming). *The Science of Meaning: Essays on the Metatheory of Natural Language Semantics*. Oxford: Oxford University Press.
- Bar-Hillel, Yehoshua (1954). Indexical Expressions. *Mind* 63 (251): 359-379.
- Bezuidenhout, Anne (1997). Pragmatics, Semantic Underdetermination and the Referential/Attributive Distinction. *Mind* 106 (423), 375-410.
- Bianchi, Claudia (2003). How to Refer: Objective Context vs. Intentional Context. In P. Blackburn, C. Ghidini, R. Turner and F. Giunchiglia (eds.), *Proceedings of the Fourth International and Interdisciplinary Conference on Modeling and Using Context* (Context'03), Lecture Notes in Artificial Intelligence, Vol. 2680. Berlin: Springer Publishing, 54-65.
- Bloomfield, Leonard (1926). *Language*. London: George Allen & Unwin Ltd.
- Borg, Emma (2004). *Minimal Semantics*. Oxford: Oxford University Press.
- Borg, Emma (2009). The Place of Referential Intentions in Linguistic Context. *Manuscrito* 32 (1):85-122.
- Borg, Emma (2012). *Pursuing Meaning*. Oxford: Oxford University Press.
- Braun, David (1995). What is Character? *Journal of Philosophical Logic* 24 (3):241-273.
- Braun, David (1996). Demonstratives and Their Linguistic Meanings. *Noûs* 30 (2): 145-173.
- Brogaard, Berit (2012). *Transient Truths: An Essay in the Metaphysics of Propositions*. Oxford: Oxford University Press.
- Burge, Tyler (1974). Demonstrative Constructions, Reference, and Truth. *Journal of Philosophy* 71 (7):205-223.
- Caplan, Ben (2003). Putting Things in Contexts. *Philosophical Review* 112 (2):191-214.
- Cappelen, Herman (2011). Against Assertion. In Brown, Jessica and Cappelen, Herman (Eds.), *Assertion: New Philosophical Essays*, Oxford: Oxford University Press, 21-48.
- Cappelen, Herman and Dever, Josh (2013). *The Inessential Indexical: On the Philosophical Insignificance of Perspective and the First Person*. Oxford: Oxford University Press.
- Cappelen, Herman and Hawthorne, John (2009). *Relativism and Monadic Truth*. Oxford: Oxford University Press.
- Cappelen, Herman and Lepore, Ernie (2005). *Insensitive Semantics: A Defense of Semantic Minimalism and Speech Act Pluralism*. Hoboken, NJ: Blackwell

- Publishing.
- Carlson, Lauri (1983). *Dialogue Games: An Approach to Discourse Analysis*. Synthese Language Library 17, Dordrecht, The Netherlands: D. Reidel.
- Carnap, Rudolph (1946). Modalities and Quantification. *The Journal of Symbolic Logic* 11 (2): 33-64.
- Carnap, Rudolph (1947). *Meaning and Necessity: A Study in Semantics and Modal Logic*. The University of Chicago Press.
- Carston, Robyn (1998). The Semantics/Pragmatics Distinction: A View From Relevance Theory. *UCL Working Papers in Linguistics* 10: 1-30.
- Carston, Robyn (2002). Linguistic Meaning, Communicated Meaning and Cognitive Pragmatics. *Mind & Language* 17 (1-2): 127-148.
- Chierchia, Gennaro and McConnell-Ginet, Sally (1990). *Meaning and Grammar: An Introduction to Semantics*. Cambridge, MA: MIT Press.
- Chomsky, Noam (1959). A Review of BF Skinner's *Verbal Behavior*. *Language* 35 (1), 26-58.
- Chomsky, Noam (1964). *Current Issues in Linguistic Theory*. The Hague: Mouton.
- Chomsky, Noam (1965). *Aspects of a Theory of Syntax*. Cambridge, MA: MIT Press.
- Chomsky, Noam (1973). Conditions on Transformations. In Anderson, S. and Kiparsky, P. (Eds.), *A Festschrift for Morris Halle*, New York: Holt, Rinehart & Winston, 232-286.
- Chomsky, Noam (1979). *Language and Responsibility*. New York: Pantheon Books.
- Chomsky, Noam (1981). *Lectures on Government and Binding*. Dordrecht, The Netherlands: Foris Publications.
- Chomsky, Noam (1986). *Knowledge of Language*. Westport, CT: Praeger Publishers.
- Chomsky, Noam (1995). *The Minimalist Program*. Cambridge, Ma.: MIT Press.
- Chomsky, Noam (2000). *New Horizons in the Study of Language and Mind*. Cambridge, UK: Cambridge University Press.
- Chomsky, Noam (2002). *On Nature and Language*. Cambridge, UK: Cambridge University Press.
- Church, Alonzo (1941). *The Calculi of Lambda-Conversion*. Princeton: Princeton University Press.
- Cohen, Joshua and Michaelson, Elliot (2013). Indexicality and the Answering Machine Paradox. *Philosophical Compass* 8 (6): 580-592.
- Collins, John (2007). Syntax, more or less. *Mind*, 116(464): 805-850.
- Collins, John (2016). Putting Syntax First: On Convention and Implicature in

- Imagination and Convention. Mind & Language* 31 (5): 635-645.
- Crain, Stephen and Pietroski, Paul (2002). Why Language Acquisition is a Snap. *The Linguistic Review* 18 (1-2):163-183.
- Cresswell, Max (1990). *Entities and Indices*. Dordrecht: Kluwer.
- Curtiss, Susan (2013). Revisiting Modularity: Using Language as a Window into the Mind. In Piattelli-Palmarini, Massimo and Berwick, Robert C. (Eds.), *Rich Languages From Poor Inputs*. Oxford: Oxford University Press, 68-90.
- Cummins, Robert C. (1996). Systematicity. *Journal of Philosophy* 93 (12): 591-614.
- Cumming, Sam (2008) Variablism. *Philosophical Review* 117(4): 605-631.
- Davidson, Donald (1976a). The Logical Form of Action Sentences. In Rescher, Nicholas(ed.), *The Logic of Decision and Action*, University of Pittsburgh Press (1967).
- Davidson, Donald (1967b). Truth and Meaning. *Synthese* 17 (1):304-323.
- Davies, Martin and Humberston, Lloyd (1980). Two Notions of Necessity. *Philosophical Studies* 38 (1), 1-31.
- Devitt, Michael (1981). *Designation*. New York: Columbia University Press.
- Devitt, Michael (2006). *Ignorance of Language*. Oxford: Oxford University Press.
- Devitt, Michael and Sterelny, Kim (1999). *Language and Reality: An Introduction to the Philosophy of Language*. Hoboken, NJ: Blackwell Publishers.
- Dever, Josh (1999). Compositionality as Methodology. *Linguistics and Philosophy* 22 (3): 311-326.
- Dever, Josh (2006). Binding Into Character. *Canadian Journal of Philosophy* 34: 28-80.
- Donnellan, Keith (1966). Reference and Definite Descriptions. *Philosophical Review* 75 (3): 281-304.
- Dowell, Janice (2011). A Flexible Contextualist Account of Epistemic Modals. *Philosophers' Imprint* 11 (14):1-25.
- Dowell, Janice (2013). Flexible Contextualism About Deontic Modals: A Puzzle About Information Sensitivity. *Inquiry* 56 (2-3):149-178.
- Dowty, David R. (1979). *Word Meaning and Montague Grammar: The Semantics of Verbs and Times in Generative Semantics and in Montague's PTO*. Dordrecht: Reidel.
- Dowty, David R. (1980). Comments on the Paper by Bach and Partee. In Kreiman, K. J. and Oteda, A. E. (Eds.), *Papers from the Parasession on Pronouns and Anaphora*, Chicago Linguistics Society, Chicago, Illinois.
- Dowty, David R. (1982). Tenses, time adverbs, and compositional semantic theory.

- Linguistics and Philosophy*, 5(1): 23-55.
- Dummett, Michael (1959). Truth. *Proceedings of the Aristotelian Society* 59 (1): 141-62.
- Dummett, Michael (1973). *Frege: Philosophy of Language*. London: Gerald Duckworth.
- Egan, Andy (2009). Billboards, Bombs and Shotgun Weddings. *Synthese* 166 (2): 251-279.
- Engdahl, E. (1980). *The Syntax and Semantics of Questions in English*. Ph.D. dissertation, University of Massachusetts Amherst.
- Evans, Gareth (1979). Reference and Contingency. *The Monist* 62: 161-189.
- Evans, Gareth (1980). Pronouns. Reprinted in Evans, Gareth (1985), 214-248.
- Evans, Gareth (1981). Semantic Theory and Tacit Knowledge. Reprinted in Evans (1985), 322-342.
- Evans, Gareth (1982). *The Varieties of Reference*. Oxford: Oxford University Press.
- Evans, Gareth (1985). *Collected Papers*. Oxford: Clarendon Press.
- Fodor, Jerry A. and Lepore, Ernie (2005). Out of Context. *Proceedings and Addresses of the American Philosophical Association* 78 (2): 77-94.
- Fodor, Jerry A. and Plyshyn, Zenon W. (1988). Connectionism and Cognitive Architecture: A Critical Analysis. *Cognition* 28: 3-17.
- Foster, J. A. (1976). Meaning and Truth Theory. In Evans, Gareth and McDowell, John (Eds.), *Truth and Meaning: Essays in Semantics*. Oxford: Clarendon Press, 1-32 (1976).
- Frege, Gottlob (1914). Letter to Jourdain. In Frege, Gottlob *Philosophical and Mathematical Correspondence*, Oxford: Basil Blackwell, 78-80 (1980).
- Galilei, Galileo (1632). *DIALOGO sopra i due MASSI SISTEMI DEL MONDO*. English translation, *The Systeme of the World: in Four Dialogues*, by Thomas Salusbury (1661).
- Gauker, Christopher (2008). Zero Tolerance for Pragmatics. *Synthese* 165 (3): 359-371.
- Gauker, Christopher (2010). Contexts in Formal Semantics. *Philosophy Compass* 5 (7): 568-578.
- Glanzberg, M. (2011). More on Operators and Tense. *Analysis* 71(1):112-123.
- Grice, Paul H. (1975). Logic and Conversation. In Cole, P. and Morgan, J. L. (Eds.), *Syntax and Semantics 3: Speech Acts*, Amsterdam, Netherlands: Elsevier, 41-58.
- Grice, Paul H. (1989). *Studies in the Way of Words*. Cambridge, MA: Harvard University Press.
- Hawthorne, John and Magidor, Ofra (2009). Assertion, Context and Epistemic

- Accessibility. *Mind* 118 (470): 377-397.
- Hawthorne, John and Magidor, Ofra (2010). Assertion and Epistemic Opacity. *Mind* 119 (476), 1087-1105.
- Heim, Irene and Kratzer, Angelica (1998). *Semantics in Generative Grammar*. Hoboken, NJ: Blackwell Publishing.
- Higginbotham, James (1994). Priorities in the Philosophy of Thought. *Proceedings of the Aristotelian Society*, Supplementary Volumes 68, 85-106.
- Hornstein, N. (1995). *Logical form: From GB to minimalism*. Hoboken, NJ: Blackwell Publishing.
- Isac, Daniela and Reiss, Charles (2008). *I-Language: An Introduction to Linguistics as Cognitive Science*. Oxford: Oxford University Press
- Jacobson, Pauline (1999). Towards a Variable-Free Semantics. *Linguistics and Philosophy* 22 (2), 117-185.
- Jacobson, Pauline (2003). Binding Without Pronouns (and Pronouns Without Binding). In Oehrle, R. and Kruijff, J. (Eds.), *Resource Sensitivity, Binding, and Anaphora*. Kluwer Academic Publishers, 57-96 (2003).
- Jacobson, Pauline (2014). *Compositional Semantics: An Introduction to the Syntax/Semantics Interface*. Oxford: Oxford University Press.
- Johnson, Kent. (2004). On the Systematicity of Language and Thought. *The Journal of Philosophy* 101 (3), 111-139.
- Kamp, Hans (1968). *Tense Logic and the Theory of Linear Order*. Ph.D. thesis, UCLA.
- Kamp, Hans (1971). Formal properties of 'now'. Reprinted in von Heusinger and ter Meulen (Eds.), *Meaning and the Dynamics of Interpretation: Selected Papers of Hans Kamp*, Leiden, The Netherlands: Brill, 11-52.
- Kaplan, David (1978). Dthat. In Cole, P. (Ed.), *Syntax and Semantics* (Volume 9: Pragmatics), New York: Academic Press, 221-243.
- Kaplan, David (1989a). Demonstratives. In Almog, J., Perry, J., Wettstein, H. K., and Kaplan, D. (eds.), *Themes From Kaplan*. Oxford: Oxford University Press, 481-563.
- Kaplan, David (1989b). Afterthoughts. In Almog, J., Perry, J., Wettstein, H. K., and Kaplan, D. (eds.), *Themes From Kaplan*. Oxford: Oxford University Press, 565-614.
- Katz, Jerrold J. and Fodor, Jerry A. (1963). The Structure of Semantic Theory. *Language* 39 (2): 170-210.
- Katz, Jerrold J. and Postal, Paul (1964). *An Integrated Theory of Linguistic Descriptions*. Cambridge, MA: MIT Press.
- King, Jeff (2001). *Complex Demonstratives: A Quantificational Account*. Cambridge,

- MA: MIT Press.
- King, Jeff (2003). Tense, modality, and semantic values. *Philosophical Perspectives*, 17(1): 195-246.
- King, Jeff (2014). Speaker Intentions in Context. *Noûs* 48(2): 219-237.
- King, Jeff, Soames, Scott and Speaks, Jeff (2014). *New Thinking About Propositions*. Oxford: Oxford University Press.
- King, Jeff and Stanley, Jason (2005). Semantics, Pragmatics, and the Role of Semantic Content. In Szabó, Zoltán Gendler (ed.), *Semantics Versus Pragmatics*. Oxford: Oxford University Press, 111-164.
- Kratzer, Angelika (1977). What 'Must' and 'Can' Must and Can Mean. *Linguistics and Philosophy* 1 (3): 337-355.
- Kratzer, Angelika (2016), "Situations in Natural Language Semantics", *The Stanford Encyclopedia of Philosophy* (Spring 2016 Edition), Edward N. Zalta (ed.), URL = <<https://plato.stanford.edu/archives/spr2016/entries/situations-semantics/>>.
- Kripke, Saul (1963). Semantical Considerations on Modal Logic. *Acta Philosophica Fennica* 16: 83-94.
- Kripke, Saul (1979). Speaker's Reference and Semantic Reference. In French, Peter A., Uehling Jr., Theodore E. and Wettstein, Howard K. (Eds.), *Studies in the Philosophy of Language*. University of Minnesota Press, 255-296 (1977).
- Kusumoto, K. (1999). *Tense in embedded contexts*. Ph.D. thesis, University of Massachusetts, Amherst.
- Kusumoto, K. (2005). On the quantification over times in natural language. *Natural Language Semantics*, 13: 317-357.
- Larson, Richard and Segal, Gabriel (1995). *Knowledge of Meaning*. Cambridge, MA: MIT Press.
- Lasnik, Howard (1976). Remarks on Co-reference. *Linguistic Analysis* 2: 1-22.
- Lepore, Ernie and Ludwig, Kirk (2007). *Donald Davidson's Truth-Theoretic Semantics*. Oxford: Clarendon Press.
- Lewis, David (1970). General Semantics. *Synthese* 22(1-2): 18-67.
- Lewis, David (1975). Languages and Language. In Gunderson, Keith (ed.), *Minnesota Studies in the Philosophy of Science*. University of Minnesota Press, 3-35 (1975).
- Lewis, David (1979a). Attitudes *De Dicto* and *De Se*. *The Philosophical Review*. 88 (4): 513-543.
- Lewis, David (1979b). Scorekeeping in a Language Game. *Journal of Philosophical Logic* 8 (1):339-359.
- Lewis, David (1980). Index, Context, and Content. In Stig Kanger and Sven Öhman

- (eds.), *Philosophy and Grammar*. Dordrecht, The Netherlands: D. Reidel 79-100.
- Ludlow, Peter (2011). *The Philosophy of Generative Grammar*. Oxford: Oxford University Press.
- MacFarlane, John (2014). *Assessment Sensitivity: Relative Truth and Its Applications*. Oxford: Oxford University Press.
- May, Robert (1985). *Logical Form: Its Structure and Derivation*. Cambridge, MA: MIT Press.
- McGinn, Colin (1981). The Mechanism of Reference. *Synthese* 49 (2):157-186.
- Montague, Richard (1968). Pragmatics. Reprinted in Thomason, R. (Ed.), *Formal Philosophy*. New Haven: Yale University Press, 95-118 (1974).
- Montague, Richard (1970a). English as a Formal Language. Reprinted in Thomason, R. (Ed.), *Formal Philosophy*. New Haven: Yale University Press, 188-121.
- Montague, Richard (1970b). Universal Grammar. Reprinted in Thomason, R. (Ed.), *Formal Philosophy*. New Haven: Yale University Press, 222-246.
- Montminy, Martin (2010). *Context and Communication: A Defense of Intentionalism*. *Journal of Pragmatics* 42: 2910-2918.
- Neale, Stephen (1990). *Descriptions*. Cambridge, MA: MIT Press.
- Neale, Stephen (2004). This, That, and the Other. In Reimer, M. and Bezuidenhout, A. (Eds.), *Descriptions and Beyond*. Oxford: Oxford University Press 68-182.
- Neale, Stephen (2005). Pragmatism and Binding. In Szabó, Zoltán Gendler (Ed.), *Semantics Versus Pragmatics*. Oxford: Clarendon Press, 165-185.
- Neale, Stephan (2007). On location. In O' Rourke, M. and Washington, C. (Eds.), *Situating semantics: Essays on the Philosophy of John Perry*, Cambridge, MA: MIT Press, 251-395.
- Neale, Stephen (2016). Silent Reference. In Ostertag, Gary (Ed.), *Meanings and Other Things: Themes From the Work of Stephen Schiffer*. Oxford: Oxford University Press, 229-342.
- Needham, P. (1975) Temporal Perspective, *Philosophical Studies* 25, The Philosophical Society and the Department of Philosophy, University of Uppsala.
- Ninan, Dilip (2010a). *De Se* Attitudes. *Philosophy Compass* 5 (7): 551-567.
- Ninan, Dilip (2010b). Semantics and the objects of assertion. *Linguistics and Philosophy*, 33(5): 355-380.
- Nowak, Ethan (2014). Demonstratives Without Rigidity or Ambiguity. *Linguistics and Philosophy* 37 (5): 409-436.
- Nunberg, Geoffrey (1993). Indexicality and Deixis. *Linguistics and Philosophy* 16 (1):

1-43.

- Ogihara, T. (1996). *Tense, Attitudes, and Scope* (Vol. 58). Berlin: Springer Science & Business Media.
- Pagin, Peter and Westerståhl, Dag (2010a). Compositionality I: Definitions and Variants. *Philosophy Compass* 5 (3): 250-264.
- Pagin, Peter and Westerståhl, Dag (2010b). Compositionality II: Arguments and Problems. *Philosophy Compass* 5 (3): 265-282.
- Parsons, Terrence (1990). *Events in the Semantics of English: A Study in Subatomic Semantics*. Cambridge, MA: MIT Press.
- Partee, Barbara H. (1973). Some structural analogies between tenses and pronouns in English. *The Journal of Philosophy*, 70(18): 601-609.
- Partee, Barbara H. (1978). Bound Variables and Other Anaphora. In Waltz, D. (Ed.), *Proceedings of Theoretical Issues in Natural Language Processing (TINLAP)* 2, 79-85.
- Partee, Barbara H. (1984). Nominal and temporal anaphora. *Linguistics and Philosophy*, 7(3): 243-286.
- Partee, Barbara H. (2015). Asking What a Meaning Does: David Lewis's Contribution to Semantics. In Loewer, Barry and Schaffer, Jonathan (Eds.), *A Companion to David Lewis*. Oxford: Wiley-Blackwell, 328-344.
- Perry, John (1979). The Problem on the Essential Indexical. *Noûs* 13 (1), 3-21.
- Perry, John (1993) *The Problem of the Essential Indexical and Other Essays*. Oxford: Oxford University Press.
- Perry, John (2001). *Reference and Reflexivity*. Stanford, CA: CSLI Publications.
- Pickel, Brian, Rabern, Brian and Dever, Josh (forthcoming). Reviving the Parameter Revolution in Semantics. In Ball and Rabern (Eds.) (forthcoming).
- Pietroski, Paul (2003). The Character of Natural Language Semantics. In Barber, Alex (Ed.), *Epistemology of Language*. Oxford: Oxford University Press, 47-68 (2003).
- Pietroski, Paul (2005). Meaning Before Truth. In Gerhard Preyer and Georg Peter (eds.), *Contextualism in Philosophy: Knowledge, Meaning, and Truth*. Oxford University Press 253-300.
- Pietroski, Paul (2006). Character Before Content. In Thomson, J. and Byrne, A. (Eds.), *Content and Modality: Themes from the Philosophy of Robert Stalnaker*. Oxford: Clarendon Press 34-60.
- Predelli, Stefano (2005). *Contexts: Meaning, Truth, and the Use of Language*. Oxford:

- Clarendon Press.
- Prior, A. N. (1957). *Time and Modality*. Oxford: Oxford University Press.
- Prior, A. N. (1968). Egocentric logic. *Noûs*: 191-207.
- Quine, Willard Van Orman (1960). *Word and Object*. Cambridge, MA: MIT Press.
- Quine, Willard Van Orman (1970). Methodological Reflections on Current Linguistic Theory. *Synthese* 21 (3-4): 386-398.
- Rabern, Brian (2012). Against the Identification of Assertoric Content with Compositional Value. *Synthese* 181 (1): 75-96.
- Rabern, Brian (forthcoming). A Bridge From Semantic Value to Content. *Philosophical Topics*.
- Rabern, Brian and Ball, Derek (forthcoming). Monsters and the Theoretical Role of Context. *Philosophy and Phenomenological Research*.
- Reçanati, Francois (2002). Unarticulated Constituents. *Linguistics and Philosophy* 25: 299-345.
- Reçanati, Francois (2004). *Literal Meaning*. Cambridge, UK: Cambridge University Press.
- Reçanati, Francois (forthcoming). From Meaning to Content. In Ball and Rabern (Eds.) (forthcoming).
- Reimer, Marga (1991). Demonstratives, Demonstrations, and Demonstrata. *Philosophical Studies* 63 (2): 187-202.
- Reimer, Marga (1992). Three Views of Demonstrative Reference. *Synthese* 93 (3): 373-402.
- Reinhart, Tanya (1983). Coreference and Bound Anaphora: A Restatement of the Anaphora Questions. *Linguistics and Philosophy* 6: 47-88.
- Richard, Mark (1982). Tense, Propositions, and Meanings. *Philosophical Studies* 41(3): 337-351.
- Roberts, Craige (1997). Focus, the Flow of Information, and Universal Grammar. In Culicover, P. and McNally, L. (eds.), *The Limits of Syntax*. Brill Academic Press.
- Roberts, Craige (2004). Context in Dynamic Interpretation. In Horn, L.R. and Ward, G. (eds.), *The Handbook of Pragmatics*. Oxford: Blackwell Publishing, 197-220.
- Russell, Bertrand (1905). On Denoting. *Mind* 14 (56): 479-493.
- Russell, Bertrand (1919). *Introduction to Mathematical Philosophy*. New York: Dover Publishers.
- Salmon, N. (1986). *Frege's puzzle*. Cambridge MA: MIT Press.
- Salmon, Nathan (2002). Demonstrating and Necessity. *The Philosophical Review* 111

- (4), 497-537.
- Santorio, Paolo (2012). Reference and Monstrosity. *Philosophical Review* 121 (3): 359-406.
- de Saussure, Ferdinand (1916). *Course in General Linguistics*. Reprinted in 1966, New York: McGraw-Hill Book Co.
- Schaffer, Jonathan. (2012). Necessitarian propositions. *Synthese*, 119-162.
- Schein, Barry (2002). Events and the Semantic Content of Thematic Relations. In Preyer, Gerhard and Peter Georg (Eds.), *Logical Form and Language*, Oxford: Oxford University Press, 263-344 (2002).
- Schlenker, Philip (2003). A Plea for Monsters. *Linguistics and Philosophy* 26: 29-120.
- Schlenker, Philip (2006). Ontological symmetry in language: A brief manifesto. *Mind & Language* 21(4): 504-539.
- Scott, Dana (1970). Advice on Modal Logic. In Lambert, K. (Ed.), *Philosophical Problems in Logic: Some Recent Developments*. Dordrecht, The Netherlands: D. Reidel, 143-173 (1970).
- Siegal, Susanna (2002). The Role of Perception in Demonstrative Reference. *Philosophers' Imprint* 2 (1): 1-21.
- Skinner, B. F. (1957). *Verbal Behavior*. New York: Appleton-Century-Crofts.
- Smolensky, Paul (1988). On the Proper Treatment of Connectionism. *Behavioral and Brain Sciences* 11 (1): 1-23.
- Soames, Scott (1984). Linguistics and Psychology. *Linguistics and Philosophy* 7 (2): 155-179.
- Soames, Scott (2010). *Philosophy of Language*. Princeton: Princeton University Press.
- Speaks, Jeff (2017), "Theories of Meaning", *The Stanford Encyclopedia of Philosophy* (Fall 2017 Edition), Edward N. Zalta (ed.),
URL = <<https://plato.stanford.edu/archives/fall2017/entries/meaning/>>.
- Stainton, Robert (1996). *Philosophical Perspectives on Language*. Peterborough, Ontario: Boardview Press Ltd.
- Stalnaker, Robert (1970). Pragmatics. Reprinted in Stalnaker (1999), 31-46.
- Stalnaker, Robert (1974). Pragmatic Presupposition. Reprinted in Stalnaker (1999), 47-62.
- Stalnaker, Robert (1978). Assertion. Reprinted in Stalnaker (1999), 78-95.
- Stalnaker, Robert (1997). Reference and Necessity. In Hale, Bob and Wright, Crispin (Eds.). *A Companion to the Philosophy of Language*. Hoboken, NJ: Blackwell Publishing 534-554.
- Stalnaker, Robert (1998). On the Representation of Context. *Journal of Logic*,

- Language and Information* 7 (1): 3-19.
- Stalnaker, Robert (1999). *Context and Content: Essays on Intentionality in Speech and Thought*. Oxford: Oxford University Press.
- Stalnaker, Robert (2004). Assertion Revisited: On the Interpretation of Two-Dimensional Modal Semantics. *Philosophical Studies* 118: 299-322.
- Stalnaker, Robert (2009). On Hawthorne and Magidor on Assertion, Context and Epistemic Accessibility. *Mind* 118 (470), 399-409.
- Stalnaker, Robert (2014). *Context*. Oxford: Oxford University Press.
- Stalnaker, Robert (forthcoming). David Lewis on Context. In Ball and Rabern (Eds.) (forthcoming).
- Stanley, Jason (1997). Rigidity and Content. In Heck, Richard (Ed.), *Language, Thought and Logic: Essays in Honor of Michael Dummett*. Oxford: Oxford University Press, 131-156.
- Stanley, Jason (2000). Context and Logical Form. *Linguistics and Philosophy* 23 (4): 391-434.
- Stanley, Jason (2002). Modality and What is Said. *Noûs* 36 (s16), 321-344.
- Stanley, Jason and Szabo, Zoltan Gendler (2000). On Quantifier Domain Restriction. *Mind & Language* 15 (2): 219-261.
- Stojnić, Una (forthcoming). On the Connection Between Semantic Content and the Objects of Assertion. *Philosophical Topics*.
- Stokke, Andreas (2010). Intention Sensitive Semantics. *Synthese* 175 (3): 383-404.
- Strawson, Peter (1950). On Referring. *Mind* 59 (235): 320-344.
- Szabó, Zoltán (1995). *Problems of Compositionality*. Ph.D, thesis, Massachusetts Institute of Technology.
- Szabó, Zoltán Gendler (2000). Compositionality as Supervenience. *Linguistics and Philosophy* 23 (5): 475-500.
- Szabolcsi, Anna (2011). Certain Verbs Are Syntactically Explicit Quantifiers. *The Baltic International Yearbook of Cognition, Logic and Communication* 6: 1-26.
- Tarski, Alfred. The Concept of Truth in Formalized Languages. In A. Tarski (ed.), *Logic, Semantics, Metamathematics*, Oxford University Press, 152-278 (1936).
- Taylor, Kenneth A. (2002). Sex, Breakfast and Descriptus Interruptus. *Synthese* 128: 45-61.
- Travis, Charles (1994). On Constraints of Generality. *Proceedings of the Aristotelian Society* 94 (1): 165-188.
- Wettstein, Howard (1984). How to bridge the gap between meaning and reference.

Synthese 58 (1): 63-84.

Wittgenstein, Ludwig (1953). *Philosophical Investigations*. London: Macmillan.

Wright, Crispin (1981). Rule-Following, Objectivity and Theory of Meaning. In Holtzman, S. and Leich, C. (Eds.), *Wittgenstein: To Follow a Rule*. London: Routledge & Kegan Paul, 99-117.

Yalcin, Seth (2007). Epistemic Modals. *Mind* 116 (464): 983-1026.

Yalcin, Seth (2014). Semantics and Metasemantics in the Context of Generative Grammar. In Burgess, Alexis and Sherman, Brett (Eds.), *Metasemantics: New Essays on the Foundations of Meaning*. Oxford: Oxford University Press, 17-54 (2014).

Yli-Vakkuri, Juhani (2013). Propositions and Compositionality. *Philosophical Perspectives* 27 (1): 526-563.

Zadrozny, Wlodek (1994). From Compositional to Systematic Semantics. *Linguistics and Philosophy* 17 (4): 329-342.

